DOCUMENT RESUME

ED 212 133 FL 012 738

AUTHOR	Padilla, Raymond V., Ed.
TITLE	Bilingual Education Technology. Ethnoperspectives in Bilingual Education Research, Volume III.
INSTITUTION	Eastern Michigan Univ., Ypsilanti.
SPONS AGENCY	National Inst. of Education (ED), Washington, D.C.
PUB DATE	Dec 81
NOTE	479p.; Published as part of the Ethnoperspectives Project. For volumes 1 and 2 of that project, see ED 200 005 and 203 663. For related documents, see FL 012 740-769.
AVAILABLE FROM	Eastern Michigan University, Bilingual Programs, 107 Ford Hall, Ypsilanti, MI 48197 ($8.00).
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Biculturalism; *Bilingual Education; Bilingualism; Cross Cultural Training; Elementary Secondary Education; Language Proficiency; *Material Development; *Models; *Multicultural Education; *Program Evaluation; Public Policy; Second Language Learning; Teaching Methods; *Testing

ABSTRACT

The 32 papers in this collection on the general topic of bilingual education technology are presented in three sections. The first group of papers deals with models, methods, and materials; the second group treats measurement and evaluation. The papers in the final section are about language mixing and bilingual education and public policy. (AMH)

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Ethnoperspectives in Bilingual Education Research:

BILINGUAL EDUCATION TECHNOLOGY

Edited by Raymond V. Padilla

College of Education
Arizona State University

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**Ethnoperspectives in Bilingual Education
Research Series Volume III**

FL 012 738

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The activity that is the subject of this publication was supported in part by the National Institute of Education, U.S. Department of Education. However, the opinions expressed herein do not necessarily reflect the position or policy of the National Institute of Education nor of the Department of Education, and no official endorsement by these agencies is inferred.

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Library of Congress Catalog Card No.: 81-68614

Published and disseminated in the United States of America by:
Department of Foreign Languages and Bilingual Studies
Bilingual Programs
107 Ford Hall
Eastern Michigan University
Ypsilanti, MI 48197

First printing December 1981.

ACKNOWLEDGMENTS

This publication would not have been possible without the interest and efforts of all those persons who responded to the call for papers. The authors whose works are included here deserve special mention not only for the papers that they contributed but also for their excellent participation in the two national forums on Bilingual Education Technology. Valuable support was provided by Dr. Claiborne Richardson and by Dr. Gwen Baker, head of the Experimental Program for Opportunities in Advanced Study and Research in Education, National Institute of Education. Thanks also to Franco Alejandro from that same institution. The members of the advisory committee were very helpful in selecting presenters for the forums.

Staff from many offices at Eastern Michigan University provided welcomed support. Dr. John Porter, Dr. Anthony Evans, and Dr. John Hubbard were especially supportive. Thanks also to Gary Keller and Laurencio Peña who chaired major sessions. Margo MacInnes and Martin Moreno contributed valuable technical services as consultants. Staff from the Bilingual Programs—Gloria Perez, Charles Romaker, Tammy Rodriguez, and Caron Eddy—performed with their customary efficiency and cheerfulness. Gracias de nuevo.

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INTRODUCTION

With the publication of this volume, the first three-year cycle of the Ethnoperspectives in Bilingual Education Research Project comes to a close. A total of six forums were held during the past three years, all devoted to the exposition and analysis of current thinking in bilingual education research. The forums resulted in the publication of three volumes, each focusing on one of three topics in bilingual education: theory, technology, or public policy. These volumes have been well received by the bilingual education community, as evidenced by the significant uses to which the books have been put: as textbooks, teacher training materials, research aids, and as background information for policy makers, to name but a few examples. Given the successful completion of the project, it may be worthwhile to summarize in this introduction the basic concepts that were implemented through the project. Following this general discussion, a few remarks will be made concerning bilingual education technology.

The implementation of the Ethnoperspectives Project reflected a very definite viewpoint as to what have been, and continue to be, key issues in the field of bilingual education during the late seventies and early eighties. The basic features of that viewpoint can be summarized in two propositions. First, it is proposed that there is a describable structure to the body of knowledge that constitutes the field of bilingual education. Secondly, it is proposed that there is a specifiable process through which knowledge in bilingual education can be expanded, modified, and refined.

Looking at the first proposition, the structure of knowledge in bilingual education can be partitioned into three areas. They are theory, technology, and public policy. These three major divisions, when properly expanded and elaborated, provide a comprehensive organizational scheme for most of the knowledge that is commonly assumed to be part of the bilingual education field. An outline of the three major areas, together with essential subcategories, follows:

Proposed Categories of Knowledge in Bilingual Education

- I. Theory
    - A. Knowledge of phenomena related to language and communication
    - B. Knowledge of phenomena related to culture and society
    - C. Knowledge of phenomena related to cognition and brain functioning
    - D. Knowledge of phenomena related to pedagogy as implemented for bilingual students
- II. Technology
    - A. Knowledge of phenomena related to models in bilingual education

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  - B. Knowledge of phenomena related to instructional materials
  - C. Knowledge of phenomena related to specific techniques or methods
  - D. Knowledge of phenomena related to technical instruments
  - E. Knowledge of phenomena related to measurement
  - F. Knowledge of phenomena related to evaluation
- III. Public Policy
  - A. Knowledge of phenomena related to federal bilingual education legislation and implementing regulations
  - B. Knowledge of phenomena related to actions of the courts
  - C. Knowledge of phenomena related to state bilingual education legislation and implementing regulations
  - D. Knowledge of phenomena related to the bilingual education policies of local school districts
  - E. Knowledge of phenomena related to the influence of the mass media on bilingual education issues
  - F. Knowledge of phenomena related to bilingual ethnocommunities

Obviously the outline is not totally inclusive of all possible knowledge in the field of bilingual education. But the key features are clearly discernable. Similarly, all of the categories are not mutually exclusive. Some overlap is inevitable, but there is enough distinctiveness in each category to clearly demarcate one area from another.

The usefulness of the knowledge categories just described, and implemented through the Ethnoperspectives Project, stems from their utility in devising a research agenda that exhibits some measure of orderliness and comprehensiveness. For instance, each year of the three-year project was devoted to topics in one of the three main areas. As a result, the researchers brought together each year exhibited a considerable amount of cohesion and the resulting publication reflected the state of knowledge in its respective area.

The knowledge categories proposed also can serve a heuristic function. They can do so in at least two ways. First, researchers and practitioners will have available a mechanism for identifying gaps in knowledge. They also will be able to assess the relative level of knowledge (or ignorance) in each area. In this sense, the categories proposed can assist in assigning priorities for further knowledge development.

Secondly, the categories of knowledge can be useful to highlight the interactions between theory, technology, and public policy. In the past, the lack of such categories has tended to confuse decision making in the field of bilingual education. On some occasions, for example, decision makers have not been sufficiently aware of the difference between choosing a particular technical alternative as a matter of public policy and the use of technical data to justify a particular value choice that reflects public policy. To some extent, the transition vs maintenance dichotomy is an example of this confusion. Similarly, there has been an astonishing lack of clarity as to the impact of theory on bilingual education policy formulation and vice versa. Theoretical notions, such as "language dominance", have been enshrined in some legislative actions even though these concepts may in fact be only theoretical. Coming from the other direction, it should be clear that federally mandated research in bilingual education is not equally attentive to all important categories of the field. In particular, such research has tended to emphasize technology and not to emphasize theory and a number of significant aspects of public policy.

Turning now to the second proposition, it is asserted that there is a specifiable process through which knowledge in bilingual education can be generated. The proposed process entails the concepts of documentation, accumulation, criticalness, and paradigm.

Documentation refers to the idea that if knowledge in bilingual education is to be preserved it must be recorded. Any medium may be used to record knowledge, but emphasis should be placed on media that maximize durability, accessibility, and transportability. The purpose of documentation is to avoid the "reinventing of the wheel" syndrome. The idea of documentation applies equally to practitioners and to researchers. Too much knowledge is being lost in the field because it has not been recorded, and useful knowledge is not being widely disseminated because it basically resides in a few heads.

The notion of documentation implies several distinct but interrelated activities. First, someone has to take the time to record knowledge. This is a critical step because knowledge that is not recorded will soon be lost. Secondly, records must be organized and preserved for others to access as conveniently as possible. This activity implies the concept of a depository, i.e., a place for holding current knowledge in bilingual education. Such depositories should range from the resource rooms of local school districts and organizations to regional and national depositories and clearinghouses.

Depositories are important because they are required in order to implement the idea of knowledge accumulation in bilingual education. This idea is essential because knowledge is most powerful when it is allowed to build on itself to generate ever increasing levels of sophistication. Scattered bits and pieces of knowledge cannot lead to rapid knowledge expansion and refinement. Such knowledge is more akin to gold nuggets than to a gold mine. The idea of accumulation, therefore, implies the gathering, sifting, storing, and sharing of knowledge. It also implies the cumulative effect that can be achieved by applying intergenerational efforts to knowledge production. Most importantly, the idea implies that everyone must contribute to knowledge production in bilingual education.

Knowledge that is well documented and accumulated from a diversity of sources can then be refined through critical thought and investigation. The most powerful knowledge in bilingual education will surely be that knowledge that has been refined by critical intellects. Hence, knowledge production in bilingual education should be guided by an ethic of criticism. Clearly it is important to distinguish between *críticos* and *criticones*. While we may be intolerant of *criticones*, we also need to encourage the *críticos* who ask the tough questions and who perhaps disquiet us with their skepticism. Moreoever, it is necessary to develop a style of criticism that is tolerant of diversity without thereby fostering self-indulgence. Criticism is a central element in the production of knowledge in bilingual education because it functions as a corrective factor permitting us to slough off knowledge that no longer informs or that misinforms.

A corpus of knowledge that is well documented and that has survived intensive criticism can then lead to further knowledge generation that is paradigm driven. Paradigms are fundamentally the distilled perspectives of organized adherents who generate knowledge within their systematized framework. What is significant about this process is that competing paradigms arise within any given field. And it is this competition that both increases the rate of knowledge production and the efficacy of the critical process noted above. The clash of competing paradigms can shape knowledge much as the old blacksmith shaped functional implements by banging iron between the force of the hammer and the resistance of the anvil. Similar shaping and contouring of knowledge in bilingual education is essential if the field is to contribute significantly to the improvement of pedagogy.

Moreover, paradigms need not be restricted to narrow disciplinary concerns. In a field such as bilingual education, it might well be argued that paradigms should be multidisciplinary or interdisciplinary. After all, the essence of a paradigm is to invoke a framework within which phenomena can be studied and organized. Such a framework should maximize comprehensiveness as well as depth.

These then are the two general propositions that formed the organizational basis for the Ethnoperspectives Project. Some of the ideas described above were implemented better than others, but the overall philosophy was evident throughout the project. If this strategy for knowledge production proves to be useful in other contexts, then perhaps the Ethnoperspectives Project has contributed something of real significance to the field of bilingual education.

Shifting now to the theme of this book—bilingual education technology—it may be useful to point out that in the ongoing public debate about bilingual education, it is often the case that a fundamental aspect of bilingual education is overlooked. To state it simply: Bilingual education is, to a significant degree, a technical solution to a technical problem. The nature of the problem itself can be expressed succinctly: In general, students whose native language is not English seem to achieve less in English monolingual schools than students whose native language is English. While there may be much disagreement as to the nature of the causes that result in this differential achievement, there can be a little doubt as to the existence of the differential and little argument as to the need to minimize or even eliminate it.

One important strategy aimed at removing the achievement differential involves the instruction of bilingual students by bilingual personnel who use bilingual education techniques and materials. This strategy is based on an intuitive understanding of the need to match a student's means of communication and cultural background with those of the teacher and, more generally, the school. Unfortunately, when this pedagogical strategy first began to gain currency among educators (c. 1967) and members of ethnocommunities, there was no off-the-shelf technology that could be applied to the bilingual classroom. It is therefore important to understand that the desire to implement bilingual education in the late sixties was not accompanied by a comprehensive body of knowledge that could be used to achieve the desired goal.

Such a situation, of course, is not unique to bilingual education. When President John F. Kennedy committed the nation to land a man on the moon within a decade, there was no off-the-shelf technology extant that could accomplish such a feat. What Kennedy expounded was nothing more than a national goal and a strategy for returning the U.S. to a position of prominence in space exploration. During the ensuing ten year effort, billions of dollars were poured into research, development, and experimentation. While there was some concern about cost overruns, timelines, etc., few people questioned the goal itself or the desirability to regain international prominence in space. In short, the goal was not negotiable, but engineers could come and go depending upon their success in solving technical problems.

In retrospect, one can see that early advocates of bilingual education were forced to borrow, adapt, invent, and even to import bilingual education technology (since no billions were poured into this enterprise). The import case is particularly instructive because it teaches a valuable lesson about the hazards of transferring technology across international borders. Early advocates of bilingual education imported from Canada what has been called the immersion model. In its home turf, this treatment was invented essentially as an intervention strategy to effect changes in ethnic group relations. The strategy involved subjecting English monolingual students to a totally French language curriculum, hence the name immersion. The assumption was that such students would be able to achieve just as well in an all-French curriculum as in an all-English curriculum. Wallace Lambert, a principal exponent of this model, demonstrated to the satisfaction of many critics (including the parents of the children who participated voluntarily in the program), that the students in the immersion program did indeed achieve as well or even better than matched counterparts in an all-English curriculum.

But what is essential to note here is that student achievement, while positive, was essentially a side effect (and one that had to be assessed carefully) in a strategy that was intended to have an impact primarily on ethnic relations. Thus, it is fair to say that the so-called immersion model was not really a model of bilingual education, in a technical sense, but a model for promoting change in intergroup relations. In short, the intended outcome of this model must be measured in terms of its impact on ethnic group relations, while its side effects must be measured in terms of student achievement in ordinary academic subjects.

When this model was imported into the United States, however, its intended use was primarily to upgrade the achievement levels of non-English-speaking students. It should thus be clear that in the process of transplantation, the side effects of the immersion model were converted to the primary effects, while the original primary effects were not critically assessed. Moreover, the early implementations of the immersion model in the U.S. assumed that non-English-speaking children should be immersed in an all-English curriculum. This treatment proved to be a woeful failure, a fact that caused much confusion among advocates and critics alike of bilingual education. Nevertheless, the model was subsequently modified so that limited-English-speaking students were immersed in their home language. This treatment has proven to be remarkably successful in increasing student achievement in both English and the native language, as well as in the content areas. The lesson that was learned is quite simple: Students from low status groups who are speakers of a nonprestige language should be immersed in their native language. This is in marked contrast to the Canadian experience where students from privileged homes who spoke a prestige language at home were immersed in a second, locally dominant language. Essentially, this is the only technical change that the immersion model has sustained in its transfer from Canada to the U.S.

Given this situation, it is clear that the importation of Canadian bilingual education technology proved successful in improving student achievement among certain minority language students. Unfortunately, the model produces such results only as a side effect of its intended primary outcome, which is to impact on ethnic group relations. The fact that U.S. educators have focused their attention on the side effects of the original model does not mean that the model no longer produces the primary outcomes. It most certainly does. In the U.S., these outcomes have to do with engendering greater awareness within ethnic groups, motivating members of ethnic groups to express the need for greater social equity, and a myriad of other phenomena that are important to ethnocommunities in the U.S. Unhappily, these outcomes, or what might be properly called side effects in the U.S. context, are not always seen positively by the majority population in the U.S. Hence, while Lambert was able to show in Canada that the immersion model produced neutral or positive side effects in terms of school achievement, those who used the model in the U.S. found out that the side effects of the transplanted model (in this case impact on ethnic relations since the main outcomes and the side effects of the original model were reversed in the transplantation process), were generally not seen positively by the majority population.

The moral of this story is that merely technical solutions to a social or educational issue are not always adequate. The fact of the matter is that today there exists an off-the-shelf technology (modified immersion model) that can be implemented in many situations where bilingual education is indicated. Unfortunately, that technology also impacts on ethnic group relations. And while members of ethnic communities may generally view these side effects positively (but this is not always the case, since some members of ethnic communities argue that this technology also has negative side effects for the ethnocommunity vis à vis assimilation, group identity, etc.), many members of the majority population would prefer not to change the status quo of ethnic group relations. That, of course, is a problem of a different order and one that may well require solutions that are not merely technical in character.

En fin, amable lector, acabamos el primer ciclo del Ethnoperspectives Project por donde empezamos: con la política. Repito que aunque es muy útil, y hasta obligatorio, fomentar el desarrollo de la teoría y la tecnología bilingüe, siempre hay que poner de menos un ojo en la política. Porque como decía doña Chencha, "Se te queman los frijoles por andar de técnico." Y para recalcar la unidad de esa dichosa troika que incluye a la política, teoría, y tecnología, les brindo dos ensayos al fin de este tomo. El primero discute la teoría del intercalamiento bilingüe—el llamado "code switching." Y el segundo propone un marco para el análisis de la política bilingüe en los Estados Unidos. Pues bien, hay los wacho en el epílogo . . .

Un servidor
Desde Baja Michiacán

RAYMOND VARELA PADILLA ne PADILLA VARELA
(sin explicación porque ya saben Uds. lo que pasa al cruzar el rio rumbo al norte)

Part I
MODELS, METHODS AND MATERIALS/ MODELOS, MÉTODOS Y MATERIALES

A doña Cleta la hicieron maestra bilingüe. Cuando le dieron la notícia replicó, "Pos, ¿Y 'ora qué?"

14

IN SEARCH OF A PARADIGM FOR BILINGUAL EDUCATION*

Adalberto Aguirre, Jr.
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In his analysis of the structure of scientific revolutions, Kuhn (1962) uses the term *paradigm* to serve as a mode for organizing the coherence of a scientific body of knowledge. Specifically, the term refers to ". . . accepted examples of actual scientific practice—examples which include law, theory, application, and instrumentation together—provide models from which spring particular coherent traditions of scientific research" (1962:10). In the accumulation of scientific knowledge, new paradigms emerge because old paradigms are unable to explain emerging puzzles or anomalies. The production of new scientific knowledge then becomes a cumulative process—paradigms replace each other within a continuous body of universal law.

An interesting feature of the concept "paradigm" is that its use is in close proximity to the phrase "scientific community." Implicit within Kuhn's analysis of the structure of scientific revolutions is the proposition that a paradigm wins over another because its advocates succeed in being more persuasive, and not necessarily because it is better (Holzner & Marx, 1979). According to Kuhn (1977:460), "If the term 'paradigm' is to be successfully explicated, scientific communities must first be recognized as having an independent existence." As a result, not only are there competing paradigms, but also competing scientific communities. Thus, the success of a paradigm depends on the level of coherency and organization within its supporting community.

For our purpose in this essay, the term *paradigm* is used in a general sense as a significant ordering principle or structuring idea that provides consistency and coherence in a body of knowledge. The specific body of knowledge we will be addressing is that which has acquired the label of "bilingual education." One of the initial assumptions in the introduction of bilingual education to the public schools was that its presence held the potential for a scientific revolution. However, the lack of a paradigm for bilingual education limited its chances of supporting this assumption. That is, as we will attempt to demonstrate, bilingual education was not a paradigmatic response to a central body of ideas characterized by a distinct identity, or a specific community sharing and promoting that identity.

Bilingualism in Education

The introduction of bilingual education into the American public school environment was seen initially as a major challenge to prevailing educational

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practice. Its challenge rested primarily in its conceptualization as an educational technology necessary for growth in the public school. That this "growth" was primarily directed at language minority children quickly aroused the public to question its educational mission (Edwards, 1980). Its presence after a turbulent decade of state, local, and federal support is not a testament of its ability to withstand resistence, but to the institutional logic pervading public education—personal growth is neither a characteristic of nor a motivating factor for educational systems. The extent of resistence drawn by bilingual education has caused many observers to identify it symbolically with the Titanic.

Despite the fact that it is still not clear that education is a major determining factor in a person's future career and social class (Blau & Duncan, 1967; Thurow, 1972; Bowles & Gintis, 1975), bilingual education was designed initially to serve as a mechanism for the provision of equal educational opportunity in the public schools to language minority children (Sugarman & Widess, 1974; Foster, 1976; Roos, 1978). Perhaps the most significant feature in bilingual education was the assumption that by enhancing the language minority child's educational opportunity, a comparable level of alteration would occur in the child's quality of life. However, the conservative approach towards change that the public school adopted, and its dedication to the rationalization of teaching as an activity, quickly resulted in the misuse of bilingual education for the enhancement of a language minority child's degree of social inequality. A reivew of the legal status of bilingual education, for instance, summarizes the issue as: ". . . the possible invidious use of bilingual education to isolate, rather than to equalize minorities for segregation purposes, or its use simply to separate minorities for instructional purposes, may militate against the general acceptance of bilingual education as a meaningful statutory right of equal educational opportunity under Title VI" (Plastino, 1979:435).

Adding to the confusion regarding the educational mission of bilingual education was the general fact that bilingual education was the result of legislative bargaining. It came about without general agreement regarding a definition of bilingualism, and it was assumed that the federal Bilingual Education Act established an earnest interest in bilingualism (Roeming, 1971). Troike (1978:1) depicts the situation as: "When the Bilingual Education Act (Title VII) was launched in 1968, it was . . . undertaken largely as an act of faith . . . (and) . . . there was virtually no research base upon which to build and service the needs of this great educational experiment." From its inception then, bilingual education was not so much a response to a need, but rather an attempt to structure a need that would serve to legitimate its presence. That it was also done as an act of faith within a highly bureaucratized environment severly limited its chances of surviving in an environment centered around purposive, rational action.

To facilitate its immersion into a delicate sociopolitical arena, the "great educational experiment" was presented as the creation of a social order sensitive to cultural pluralism, and a reflection of its national interest in bilingualism. The assertion that bilingual education was a reflection of the national interest aroused immediate concern in the general public domain, and mobilized the public school to limit its program logic. Bilingual education was then rapidly transformed to represent a single, uniform phenomenon.

Since cultural pluralism was a principal basis for promoting bilingual education, its scope of application was also quickly reduced to language minority children (Fong, 1978). The advocacy role that language minority groups assumed regarding bilingual education, for example, was a principal means by which these groups intereacted with the social order, but not vice-versa. As a result, it rapidly became apparent that while it might not be in the national interest to employ bilingual education as a means for enhancing the educational growth of language minority children, it was in the national interest to use bilingual education as a monitor of their educational growth.

The limited applicability of bilingual education, in turn, caused bilingual education rationales to be viewed as somewhat ethnocentric. The necessary context was thus created for bilingual education opponents to argue that bilingual education was only justified in terms of group autonomy, and not in the natural order of human rights for individuals to equal educational opportunity. As a socializing element in the public schools, bilingual education came to be portrayed as a mechanism for building protective ethnic enclaves in the schools. As a result, critics of bilingual education were quick to locate the bureaucratic support necessary for the creation of these enclaves (Thernstrom, 1980:12): "The staffing of the Division of Bilingual Education by ethnic militants followed an administrative tradition: Government programs aimed at the particular group are often run by militant members of that group."

At this point, we can make the following observations from the preceding discussion. As a legislative creation, bilingual education was a response to a rapidly expanding social environment in which the educational inequality of language minority children was increasing in visibility. As such, bilingual education was not a paradigmatic response to a central body of ideas and a coherent tradition of scientific research. Though at the time of its emergence it drew support from a variety of academic disciplines interested in the study of bilingualism, it was not sufficient to evolve into a specific audience that would provide bilingual education with an independent existence. For instance, the attempt to present these disciplines as being committed to bilingual education because of their interest in bilingualism had the immediate result of drawing the criticism that bilingual education research lacked an autonomous methodology.

Secondly, the concern with the promotion of bilingual education as a vehicle for equal educational opportunity in the public school was instrumental in causing bilingual education rationales to be translated into terms of group autonomy. The most immediate result was that bilingual education was oversimplified to represent a single and uniform phenomenon, clearly identifiable and distinct from other forms of education (Lewis, 1977). Its immersion into a system of mass public instruction in which few individual characteristics were taken into account, created numerous structural obstacles in its mission to serve the individual characteristics of language minority children. The manifest implication of this dilemma for everyday life was that hypotheses regarding the function of bilingual education produced two competing camps. Members of one camp hypothesize that bilingual education is necessary for the social accommodation of cultural pluralism, while those in the other hypothesize that bilingual education is sufficient for the segmentation of ethnolinguistic groups within a superordinate framework of ethnic values.

Finally, as a legislative brainchild, bilingual education was an institutional response to another institution's needs. The increased visibility of the language minority child's educational inequality was reduced by incorporating it into an institutional context. Its institutional incorporation assured that it would be reflective of an institution's attempt to deal with an unstable social reality. As a result, bilingual education was directed at the social fact that language minority children were not part of the school's social reality because they were not full corporate members of the institution. Thus, the presentation of bilingual education as an institutional response to individual needs could only function satisfactorily if it neither reflected change nor personal growth. In the end, bilingual education was destined to be functional in the reproduction of an institutional social reality, and not for personal growth.

Making Sense

In their encounters with the real world, individuals carry in their head a model of society that allows them to make sense of these encounters. This model facilitates making sense by influencing what the individual looks for and what is to be done with the observations. For instance, this process of encounter with the real world is summarized by Boulding (1981:94) as: ". . . it still remains true that at any moment each human individual is surrounded by a real world of which the structures in his brain are a part, and which is affected by these structures in processes that are themselves part of the real world."

In a sense then, individuals hold a general conception for social phenomena they most often come in contact with—some mental picture of how these phenomena come together and work. In the construction of life experiences for the individual, this general conception for social phenomena permits the generation of interpretations regarding "new", or frequently encountered phenomena. In this manner, the individual's construction of social reality retains a level of coherency. For our purposes in the following discussion, the term "model" refers to the general image of the main outline for some major phenomenon, including ideas about the nature of the units involved and the pattern of their relations.

As the preceding discussion has already pointed out, bilingual education was primarily designed to deal with the increasing level of educational inequality experienced by the language minority child in the public schools. As a general social fact, the increasing level of inequality took the shape of a major social phenomenon because of its constraining effect on everyday life. In other words, the presence of inequality made sense. However, the failure of bilingual education to be a paradigmatic response to a body of ideas prevented it from assuming a "general image" that would seriously question the assumptions in an educational system rooted upon unequal relationships. Instead, the search for a "general image" took the pragmatic route of developing competing definitions. These definitions were not developed as an attempt to see which one most closely reflected the general outline of the phenomenon, instead they became a search for substance. It may be that, given the makeshift development of bilingual education, it was expected that the definition for the phenomenon with which most people would identify, would become the shared general image of the phenomenon.

The general expectation that a search for a definition of bilingual education would produce some statement regarding its general nature quickly ran into difficulty. For example, employing a limited view of the phenomenon, Saville & Troike (1971:1) defined bilingual education as ". . . an educational program in which two languages are mediums of instruction." In contrast, the U.S. Office of Education produced what it regarded as a *usable* definition of bilingual education (Andersson & Boyer, 1970:49): "Bilingual education is instruction in two languages and the use of those two languages as mediums of instruction for any part of or all of the school curriculum." These are probably the most often cited definitions, or examples, of bilingual education, and they typify what is included in almost all other definitions of bilingual education—the use of two languages in and for instruction.

However, the lack of specificity in the definitions regarding the interactive processes of bilingualism in education, resulted in the development of a continuum for bilingual education programs:

1. programs where all classroom instruction is in the second langauge with the exception of a component in mother-tongue skills;
2. programs in which both languages are used in an equal manner for instruction;
3. programs in which classroom instruction is in the mother tongue and the target language is taught as a subject.

An interesting background variable at this stage in the presentation of bilingual education as a continuum was the ensuing debate between advocates for *assimilation* and those advocating for *pluralism*. As a result, the preceding continuum took on an ideological form by acquiring the labels of (1) transfer, (2) enrichment, and (3) maintenance. Had there been greater cohesion among bilingual education proponents at the time, this ideological debate would have served an instrumental purpose in legitimating its presence. Instead, this debate became instrumental in depicting a state of confusion within bilingual education. That is, the debate demystified the nature of bilingual education.

While the search for definition did permit the development of *images* for bilingual education, it was still far from the actual need of making sense of bilingual education. On a global dimension, the transition from definition to program development predicated that variation between programs would primarily be found in the arrangement and combination of components. In practice, differences between bilingual education programs were to be found in the arrangement of elements comprising the program's educational technology.

The most serious implication in the transition from definition to program development was that program growth came to be interpreted as additive, with the goal being to oversee the total number of units thrown together because they conformed to a common definition. By comparison, program growth is not cumulative in that each unit, as a series of increments, prepares the way for the next. Given an institutional environment and its own demand on constituent units, the latter is much more likely to alter patterns, whereas the former is functional in pattern maintenance. It is almost as if programs were expected to define themselves and the phenomenon they were designed to address.

Technology

In regard to the continuum for bilingual education programs discussed in the preceding pages, one can list the following educational technology variables in the application of bilingual education teaching methods (Paulston, 1980:7-14; Ramirez, 1980; Cummins, 1980; Matute-Bianchi, 1980; Paz, 1980).

1. *The sequencing of language*. For example, Title VII programs teach initial reading simultaneously in either the two languages or in the mother tongue first, whereas the Canadian early immersion programs typically reverse the process and teach initial reading in the second language.
2. *Time allotted* for each language, both in sequencing and within the curriculum. Title VII programs, for example, do not delay more than one year in introducing reading in the second language (if not taught simultaneously).
3. The *relative emphasis* on the mother tongue. In curriculum design this is accomplished by including a bicultural dimension to supplement the bilingual goals.
4. *Teacher ethnicity and competency*. Variation in this variable occurs in that the teacher may be a member of the same ethnic group as the children, the same teacher may use both languages in instruction, or the two languages may be represented by a certified teacher on the one hand and by a teacher's aide on the other.
5. The *language of the surrounding community* and its impact on the bilingual program in the school is a variable that is poorly dealt with. It is readily assumed that the staffing of bilingual programs with paraprofessionals from the local community will provide the necessary continuity between home and the school.

While many more educational technology variables can be found to distinguish between bilingual education programs, the preceding ones are those most frequently encountered in the literature on bilingual education, and those asserted to be most influential in determining bilingual education results.

These variables, however, are rarely operationalized within a coherent framework. As a result, they do not provide for an empirically-based feature analysis of bilingual education models. Studies of bilingual education program effectiveness, for example, are not of potential benefit to program development because the lack of consistency in their presentation of educational technology variables prevents the interpretation of results within the scope limitations of what is being studied. In a frequently cited review of the issues in bilingual education program effectiveness, Zappert & Cruz (1977) list the following as limitations in the structured comparison of bilingual education programs:

1. No control for student's socioeconomic background.
2. No measure of the student's initial language dominance.
3. No specification of teacher qualifications, and teaching materials.

After their lengthy review, Zappert & Cruz (1977:39) conclude that: ". . . the research demonstrates that bilingual education and bilingualism improves, or does not impede, oral language development, reading and writing abilities, mathematics and social studies improvement, cognitive functioning, and self image. In addition, there is empirical evidence that bilingual education programs improve school attendance."

A careful look at the variables mentioned above, and others listed by Zappert & Cruz (1977), reveals that they are background characteristics of teachers and/or students, rather than structural features of bilingual programs. This makes sense if what one is searching for is an approximation of what bilingual education programs consist of, and not how their functioning capability is affected by technology variables. What is possible to conclude from studies that review bilingual education characteristics is that they fall short of making meaningful contributions to the field because their findings cannot be employed to separate bilingual education programs that do work from those that do not work. As a result, the preceding conclusion reached by Zappert & Cruz is an actual reflection of the state of the art for bilingual education—all programs, whether effective or ineffective, are acceptable because they are bilingual to some degree.

The main reason for undertaking comparative studies is for the discovery of general laws, or principles. Following Kuhn's notion of paradigm, comparative studies are necessary for the explication of a model from which will spring a coherent body of ideas. The formulation of these ideas within a coherent framework will also be helpful in predicting program success, or in diagnosing program weaknesses. Given the development of general principles from a main body of ideas, together with a detailed knowledge of the importance of relevant variables and their behavior, greater reason for confidence in making decisions is provided. As we have seen, the lack of concept and data comparability in bilingual education programs limits structured comparison, and prevents the generation of general principles.

General Observations

For all practical purposes, the attention invested in the initial search for a definition of bilingual education was both a snare and a delusion. A snare in the sense that definitions took the form of rules for a game in which the players needed order. The delusion was created because in order to function properly, bilingual education must be set off from general education. The irony is that the initial basis for developing bilingual education was to augment the language minority child's chances of succeeding in a body of general education. The aim was certainly not to isolate the phenomenon, bilingualism, and study its development independent of a general body of education. As a result, inequality was enhanced, and not altered.

The transition from definition to program development was neither based on a consistent body of data nor on a body of general principles. The lack of specificity in the elements constituting bilingual education was responsible for not developing confidence for making decisions that would outline the parameters of a general model for bilingual education. For example, one result was the development of a continuum for bilingual education programs that was based on a comparison of bilingual relationships—those that exist between the individual and the system of education, and those that exist between groups and the total system of education. Consequently, any program with some hint of bilingualism was incorporated into the general body of bilingual education.

Secondly, in this transition, educational technology variables became a principal means for evaluating bilingual programs. However, the lack of consistency in the presentation of these variables, the failure to account for their interactions within a conceptual framework, did not permit for the analysis of program possibilities. For example, the focus is on the study of a large number of bilingual education programs because it is assumed that they are derivatives of an ideal type blueprint, rather than on an examination of how educational technology variables cluster into different programs. The latter, given the relative level of indeterminacy between variables, has the greatest potential for explicating parameters that are reflective of a general model or necessary as guides for model building.

Interpretations

Two issues have been emphasized in this essay as fundamental for the development of a paradigm for bilingual education. First of all, it is necessary to develop a model and a methodology limited in scope by the nature of the phenomenon addressed. The initial dependence of bilingual education on contributions from academic disciplines doing research in bilingualism forced it to adopt the assumptions of those disciplines and to work according to the models they had developed. That is, the emphasis was to see what could be borrowed from what was already around in the hope that it would make sense for bilingual education. Consequently, a set of beliefs unique to bilingual education did not develop.

Secondly, the failure to develop a unique set of beliefs prevented the development of a consensus regarding an acceptable frame of reference and a terminology for its expression. As a result, crises in bilingual education centered around the lack of consistency in research findings, and its failure to cluster educational technology variables around what made sense and what did not in an attempt to facilitate decision making. The primary obstacle against decision making in bilingual education then became the assertion that as long as they addressed a minimal level of bilingualism then they were providing a service to the general body of education. At this point, the service to children becomes secondary. For example, because bilingual education was a response by one institution to the needs of another, its utility was evaluated in terms of its contribution to, and reflective of, the institutional environment, rather than how it interacted with the constituent units of the environment.

In addition, the failure to develop a model for bilingual education was not supportive of a holistic approach to bilingual education. Instead, the notion that was developed and supported was that bilingual education was the aggregation of things similar in nature. This emphasis on similarity was largely a result of the initial attempt to borrow from other academic disciplines what was assumed would make sense for bilingual education. A latent consequence of this was that similarity became differentiated by academic discipline, and concern was placed on the specialization of knowledge from each academic discipline. As a result, the constituent elements for bilingual education differentiated between and among themselves, and reinforced this by assuming specialized functions. Thus, bilingual education was not conceptualized as a system of education, but rather as a type of education definable only in terms of the function its components assumed.

The conceptualization of bilingual education as a system of education would have forced it to initially abandon the notion that its development was dependent on the sum of its parts. The notion was functional for the maintenance of a stable institutional social reality. By contrast, as a system of education, bilingual education would have become highly competitive in an institutional environment directed at experiencing change and finding a net purpose for it. Change was, of course, the essence of the reality bilingual education was designed to address. For example, bilingual education decided to establish its point of departure from general education by *emphasizing* differences, rather than pursue these differences by placing them in a system of education capable of competing within a highly institutional, and increasingly bureaucratic, environment. In a classic study of the Renaissance as an educational achievement, Durkheim (1969) argues that, in order for people to feel the need to change their educational system, they must become conscious of ideas and needs that have emerged for which the old system of education is no longer adequate. Following Durkheim's observation, it was never really clear what bilingual education was addressing, which ideas it was addressing that the old system was not, or whether it was responding to specific needs. As such, bilingual education neither reflected nor manipulated change.

Summary

We have attempted to suggest in this essay what may have been initial points in the rise of bilingual education that prevented the development of a paradigm. The failure of bilingual education to arise as a paradigmatic response to a unique set of beliefs prevented the development of a model that would generate hypotheses relevant to its survival within a bureaucratic environment. Thus, a framework with rules for describing relationships between bilingual education variables was not developed, and as a result, validation for programs became unmanageable and ad hoc.

Given its dependence on surrounding academic disciplines, perhaps the most serious limitation in bilingual education was its failure to develop its own unique character. In the world of everyday existence, academic disciplines function as institutional actors who increase their own chances of survival by the level of attraction they draw from other institutional actors, and their ability to employ this attraction to create a dependent relationship in which they are the superordinate party. A prerequisite then in a search for a paradigm is that bilingual education must ground itself in what it is and commit itself to it. In simple terms, it must gain control of itself, and direct its own action. Regarding the larger institutional context within which it must compete, bilingual education and its supporters must heed the advice offered by Machiavelli in *The Discourses*: "He who establishes a dictatorship and does not kill Brutus, or he who founds a republic and does not kill the sons of Brutus, will only reign for a short time."

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ED212134

THE IMPLEMENTATION OF A BILINGUAL INSTRUCTION MODEL: THE NEW CONCURRENT APPROACH

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INTRODUCTION

The professional literature (Andersson and Boyer, 1970; Cordasco, 1970; Gaarder, 1975; U.S. Commission on Civil Rights, 1975) has sporadically made reference to a bilingual approach in which the teacher switches from one to the other language as she teaches the bilingual child. This approach, known as the *concurrent approach*, is described in rather vague terms (Andersson and Boyer, 1970:100), and no research on the effectiveness of the approach has ever been conducted. It is therefore no surprise that most bilingual specialists and teachers hold reservations in regard to the usefulness of the approach. The random switching practices, often within the same sentence, were felt to lead to confusion as the child is developing his second language skills. However, the term, *concurrent approach*, was used in several Title VII basic program proposals in order to identify the instructional method to be used in the program. This led, at least in one instance, to a thorough investigation of what this approach, or a modified version thereof, might accomplish.

It is the objective of the present paper to describe the author's work done with federal support in a South Texas school district, the United Independent School District of Laredo, Texas—work that has allowed the investigator to define the approach and to describe its methodology. When funding was no longer available, the work was continued at the University of Texas at San Antonio and its results have been presented at conferences here and abroad. After five years of research, the model has now been sufficiently refined to permit us to specify and to describe the components of this *new* concurrent approach.

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WORKING WITH A K TO 3 BILINGUAL PROGRAM IN LAREDO

The United Independent School District, Laredo, Texas was funded in 1974 to implement a Title VII Bilingual Education Program from grades K to 3. To complement the results of the formal evaluation design, the district utilized the services of external consultants-evaluators. In its proposal requesting federal funding for a K-3 bilingual program, the district stated the following:

> The United District's bilingual program will be externally evaluated on a pre and post basis by external consultants. They will evaluate the

> project in early fall and late spring by observing, inquiring, and analyzing the total scope of the program. The extent of their evaluation will focus on observing the program in operation, interviewing students, conducting conferences with the Title VII staff, and providing feedback on ways of improving the program's deficiencies. They will submit to the Project Director and administration a written critique on their observations and recommendations. (1977:118)

The author served in the capacity of external evaluator from 1975 until 1979, when the funding was discontinued. The general objective of the project was to implement an action research project whereby different bilingual instruction models would be tested. At the same time the project was defined as a quasi-longitudinal study "to determine the effects of the concurrent approach treatment; that is, the teaching of content through the concurrent use of English and Spanish, on the achievement of these students." The school district hypothesized that:

> Those students who are taught all subject areas bilingually through the concurrent approach will achieve significantly higher in Reading, Language, and Math than a comparison group of students who are taught through the traditional English school curriculum.

The mention of the concurrent approach here was intriguing and in his capacity as a consultant-evaluator, the author set out to investigate the knowledge that educators had with respect to the nature of concurrent language instruction. Neither in the school district nor elsewhere, including the professional literature, was there any clear notion in this regard. In its absence, he started to pose questions as to what the district wanted to see accomplished and how they might proceed to define such an approach or, at least, to identify some of its outstanding features. Queries of this nature led ultimately to the formulation of an approach in which two languages are being used concurrently as media of instruction.

THE OLD AND THE NEW VERSION(S) OF THE CONCURRENT APPROACH

The idea of using the bilingual's two languages as media of instruction is not a new one. It draws on two basic facts. Switching back and forth between the two languages of a community is common practice among bilinguals, and the teacher who employs such a strategy merely does what she is familiar with when she interacts informally in her community. The switching also serves the purpose of assisting the bilingual child in comprehending the subject matter of the class. The topic taught in English becomes clear to, say, the Spanish-speaking child, as the teacher explains the subject also in his stronger language. Equally familiar to everyone is the opposition by teachers and education specialists to this kind of language alternation in the classroom. Bruce Gaarder (1978:37) argues in this respect that:

> A disastrous compromise is possible: rapid switching by the teacher from one language to the other. I have seen this done continuously in projects in South Texas. The conclusion there was that the miraculous language learning of which young children are capable was not taking

place, for the pupils had but to wait a few seconds to receive the same message in their own tongue.

A somewhat weakened objection is found in Andersson and Boyer (1970:100) who simply emphasize the reservation held by many in this regard. Although no actual description of concurrent teaching is provided anywhere, three features seem to be present in all the earlier forms of the concurrent approach: (1) the randomness of the alternation, (2) the syntactic nature of the switches and (3) the use of translation. As for the first, there seems to be no clear pattern why the teacher would switch to the child's native language other than to ensure that the child understand the lesson. The randomness of the switch prevents any control of when and where in the teacher's discourse the switch will occur, so she may begin a sentence in English and complete it in Spanish or vice-versa or she may switch at sentence boundaries. Intrasentential codeswitching may be particularly risky for the child who is still in the language developmental stage.

Finally, the concurrent translation approach as used by some bilingual teachers in California (Christina Bratt-Paulston, 1980 personal conversation) establishes for the children a pattern whereby they can avoid all second language learning by only following the teacher's explanations in their first language and disregard the teaching in the second language altogether. This consecutive interpretation strategy is frequently used at conferences or in courtrooms where there is no intent for the speaker of one language to learn the other, but this does not lend itself as a strategy of instruction in the public school. In conclusion, the reservations held in regard to the old version(s) of the concurrent approach seem to be well taken.

The principle of concurrent teaching, on the other hand, is valid as it reflects the idiosyncracy of the bilingual who, at all times, utilizes both languages of his repertoire. However, to make it work as a teaching strategy requires that one re-examine how the two languages can complement one another and what strategy is sociolinguistically, phychologically and educationally sound to justify their presence in the instructional process.

The new concurrent approach, henceforth the NCA method, resulted from the author's desire to bring together the child's two languages in a way that would further the latter's language development and, at the same time, lead to satisfactory school performance. To accomplish this objective, he had to address several issues:

1. the extent to which the native language must be developed in order to succeed in learning a second language;
2. the extent to which the home language should be used in school to develop a positive attitude toward it;
3. the extent to which first language maintenance in the primary grades would not interfere with the transition to English in post-primary education;
4. the extent to which the use of both languages would lead to an understanding of the bilingual functioning of some sectors of our society;
5. the extent to which school subjects could be learned through two language media.

These issues are all addressed in the following sections that represent the theoretical bases of the NCA method.

The Child's Language Repertoire.

The child in a bilingual program brings to his school native proficiency in one language and different degrees of knowledge in a second language. The child's vernacular, usually Spanish, is a regional variety of the language that he has learned in his home and his neighborhood for many years. As any normal child, he has learned this variety well and can communicate in it comfortably. He is also aware of the fact that there is another language in his community, English. He notices that this latter language is spoken by most people in his school and he may wonder, from his first school day on, how important it is for him to learn to speak it well just like the people around him. It is his teacher's role to help him acquire a healthy outlook at the presence of these two languages in his life.

In the NCA method it is crucial that the teacher stress, more through action than through words, the equal prestige of the two languages as well as the functional distribution of each. The child thus acquires a feeling for the appropriateness of either code and learns to function accordingly. He may even acquire a feeling for the appropriateness of switching from one variety to the other under certain circumstances. The notion of equal prestige of the two languages is furthermore the basis for his willingness to continue using Spanish while he is acquiring English. As for Spanish, he realizes that variations occur in it and that his teacher says many things differently and wants him to say them at school just like she says them. Thus, not only the acquisition of English begins in early schooling but also the awareness for the importance of a nonvernacular variety of Spanish.

Language and the School Curriculum

The importance of distinguishing between first language and second language instruction is a familiar notion. This distinction comes to occupy an especially significant place in a program where L_1 and L_2 are developed simultaneously. Whereas in native language instruction the teacher seeks to strengthen and to expand a system that is in its rudimentary form already there, in second language instruction she creates, except for the language universal features, a new system. The advances in the methodology of second language acquisition have not always been accompanied by advances in first language learning methodology. It is this latter learning process that holds particular importance for the implementation of the NCA method.

The development of native language skills is justifiable on two grounds: a psycholinguistic and an affective one. As Jim Cummins (1979, 1980) has shown, a language learner must reach the threshold level in his first language to succeed in acquiring a second language. It is our contention here that this does not necessarily have to be a consecutive process but that the threshold level can also be reached in the first language as the second language is being acquired as long as sufficient time is provided to develop the native language systematically. The balanced dual language use not only provides this time but also helps us pursue simultaneously the affective goal, that of establishing the equality of prestige of the two languages. In allowing equal time for Spanish and English, the teacher tells the child that either language may serve as an effective communication tool. This notion is further strengthened by the fact that the teacher herself serves as a model of bilingual behavior when she utilizes both languages, not only as a classroom technique, but also as a general strategy of verbal interaction.

Language development in either language is a continous process in the bilingual program. Even though times are set aside for the teacher to teach language arts, the language development does not stop there. There is also a covert development while the teacher teaches content. The NCA method contributes most effectively to this type of language development because the teacher has become more sensitive to the child's actual language needs.

The Teacher and her Class: A Social Situation.

Let us briefly examine the roles of the teacher and her class in a sociolinguistic perspective. In this context, the class shall be considered a social situation in which the teacher and her students partake as co-participants. The role relationship between teacher and children is clearly defined and any violation of the agreed-upon roles would bring about—in Fishman's (1972:44-50) terms—an incongruent situation. The teacher, however, is not merely a participant in the situation but also an analyst thereof. The outcome of her analysis will tell her what to do next. She will identify certain signals or cues, some of which are linguistic in nature, and others educational or social, and these promote actions that are triggered in her classroom by such cues. In other words, the teacher is not teaching a lesson removed from the social realities of her group but she adjusts her teaching to these realities at every instance. This is particularly true for a class taught through the NCA method because the teacher responds there to a set of cues that trigger the language alternation. Every language switch must however achieve a pedagogically sound objective. In other words, it is not switching for switching's sake but rather switching for a clearly definable purpose. The children, in turn, view their teacher's language switch as a hint to follow; that is, an instruction for them to do the same. By learning the rules of the game, they develop an awareness for and experience in the interactional norms that characterize the verbal behavior of any bilingual person.

The Content Lesson.

Language switching occurs in the NCA method only in the teaching of content. The overt language development components of a bilingual program are monolingual activities. English-as-a-second-language lessons are taught in English only and Spanish-language lessons, in Spanish only. School subjects other than language arts utilize concurrent teaching techniques in which the teacher shifts smoothly from one language to the other as the lesson is carried on. This alternation enables the teacher jointly to develop the bilingual child's two languages without jeopardizing his school progress. Thus, concepts are formed or reinforced in both languages, the lexicon is expanded and many other meaningful activities go on in both languages simultaneously. In other words, the conceptual reinforcement is accompanied by vocabulary-building techniques as words are necessary to show that a given concept is understood. Concept formation and lexical reinforcement or expansion are therefore two powerful cues to which the teacher responds by switching to the other language. However as she switches, she avoids translating her earlier discourse in L_1 but instead reinforces the concept by elaborating on it in L_2. The continuity of a lesson must not be interrupted under any circumstances. As a matter of fact, the resourceful bilingual teacher is switching so smoothly from one to the other language that an average listener would barely realize that the medium of communication has changed. This smoothness of the switching event is therefore crucial for the continuity of the lesson and it may take some special training on the part of the teacher to develop this particular expertise.

The teacher's language switch is intended as a hint for the child to follow her example (see above). If he is reluctant to do so the teacher-student role relationship would invert and the child would instead induce the teacher to return to the language used before. Again, special training is necessary to guide the child in his language choice. On the other hand, the teacher's reluctance to accept the child's code should never lend itself to the interpretation by the child that his answer was wrong, e.g.:

T: ¿Quién descubrió América?
S_1: Christopher Columbus.
T: ¿Quién? ¿María?
S_2: Cristobal Colón
T: Muy bien, María
S_1: That's what I said.

This could be handled better in the following way:

T: ¿Quién descubrió América?
S_1: Christopher Columbus.
T: That is correct. Cristobal Colón descubrió América.
S_2: Y vino en un barco grande.
T: Sí, vino en el Santamaría.

Most important, however, is the purposefulness of the switch. A language switch must come as a response to a cue and in implementing it, the teacher must be aware of the pedagogical objective that she pursues. Table 1 lists the cues to which the teacher reacts when she initiates the switch. Her expectation is that the children will follow her language choice decision. If

TABLE 1

System of Cues

1. *Classroom Strategies* a. Conceptual reinforcement b. Review c. Capturing of attention d. Praise/Reprimand	2. *Curriculum* a. Language appropriateness b. Topic c. Text
3. *Language Development* a. Variable language dominance b. Lexical enrichment c. Translatability	4. *Interpersonal Relationships* a. Intimacy/Formality b. Courtesy c. Free Choice d. Fatigue e. Self-awareness f. Rapport

they do not, she must be resourceful enough to bring about the switch at a later time.

Although the cues, *concept formation* and *lexical enrichment*, have been mentioned above and a more detailed treatment of the cue-response technique follows in the section on professional training, one further example may be in order here. *Topic*, a cue pertaining to the *curriculum*, stresses the appropriateness of a given language in the teaching of a specific topic. As the teacher discusses two distinct events of American history, the discovery of America and the arrival of the Pilgrims, she realizes that one is a typically Hispanic experience, whereas the other is a typically Anglo-American one. When she switches from one topic to the next, she may also switch the codes; hence, Spanish may appeal to her as more appropriate when talking about the former and English, when talking about the latter. The following transcription of a recorded lesson taught at Clark Elementary School, Laredo United I.S.D., illustrates the point:

T: Who began Thanksgiving?
S: Christopher Columbus.
T: ¡Empecemos con *Christopher Columbus*! ¿Cristobal Colón descubrió qué?
S: América.
T: Y luego? Who came to America on a big ship?
S: The Mayflower.
T: Who came on the Mayflower?
S: Christopher Columbus.
T: No, he came on another one. Who came on the Mayflower?
S: . . .?
T: The who?
S: The Pilgrims.
T: The Pilgrims came on the Mayflower.
(Grade K)

To summarize, the change in topic may trigger a change in code if there is, say, a cultural justification to associate one language with the first topic and the other language with the second. Responses to other cues can be justified in similar fashion making it possible to conduct the content classes like math, science, social studies and others in both languages concurrently allowing to each approximately 50 percent of the class time.

STAFF DEVELOPMENT

The implementation of an approach like the NCA method that capitalizes on the conscious manipulation of the teacher's language resources requires of the teacher the ability to detach herself from the teaching task and self-monitor her performance. In other words, as she teaches, she must make a number of decisions as to the cue that she wishes to respond to, the language that she wishes to use in response to that cue, the reaction to her language switch that she wishes the child to manifest, the strategy to use if the child has failed to follow her hint to switch, and so forth. The deliberate use of faculties that normally are intuitive requires professional training that differs somewhat from conventional teacher education methods courses or in-service workshops. It is therefore the purpose of this section to describe the staff development required for the NCA method on the basis of five basic components: (a) the language attitudinal training, (b) the self-consciousness of language behavior training, (c) the cue-response training, (d) the lesson planning training and (e) the lesson implementation training.

The Language Attitudinal Training

Let us assume that the teachers selected to implement the NCA method are proficient in both the majority language and the home language of their students. The attitude of these teachers toward both languages should be one of equal prestige, although they should recognize that the two languages are distributed functionally in different ways and that there is regional and social variation in the speech of their students. This is especially important in relation to the minority language. Teachers should view the student's achievement of English language proficiency as a most important goal but always in conjunction with the development of the children's native language by encouraging its use and building upon the resources the children already have. As for the children's verbal behavior, the objective should be balanced dual language use. To promote this atmosphere of bilinguality, teachers should model bilingual behavior, not only in the classroom, but at all times (see above). As children imitate their teachers' behavior in so many ways, bilingual behavior can be emulated effectively in this way, too.

Not every teacher may be ready to function in a totally bilingual atmosphere, but the professional training she is undergoing will help her promote a psychological climate that is appropriate for the children to develop both languages simultaneously. Through the acceptance of the home language, the teacher will achieve the motivation necessary for the acquisition of English. Proficiency in both languages will ultimately lead to the acceptance of English alone as a medium of instruction during the post-primary years. By the same token, he, or his family for him, can identify means in the broader community in order to use and expand further the first language skills developed during his early schooling.

Self-consciousness of Language Behavior Training

The teacher must now seek to become self-conscious about her verbal behavior, so that she can know exactly when and why she should switch from one to the other language. This self-observation is referred to as *self-monitoring* and becomes an important part of the teacher's training. Its objectives are, first of all, to keep an accurate record of the time spent in either language. Teachers often deceive themselves in this respect, since a teacher stays longer in the language in which she feels more secure. By recording her own lesson, playing the recording back and measuring the time spent in each language the teacher identifies the exact time ratio of either language in order to increase or decrease its use accordingly.

It is not only the overall time that should require her attention but also the time spent in each switching event. Too little time in one language almost becomes an instance of intrasentential codeswitching, a strategy that one wants to avoid here. Furthermore, the brevity of the switching event fails to reveal the grammatical structure of the language and lacks therefore in didactic value. Excessive time in one language, on the other hand, indicates that the teacher has disregarded the cues and has not addressed herself to the actual educational or linguistic or social needs of her students. Again, audiotaping and replaying also serve here the purpose of self-monitoring, so that the teacher may develop an intuition for the optimum length of a switching event. The third objective of self-monitoring is to provide the rationalization for the switch. The teacher must know each time that a switch occurs why a language alternation is appropriate here and what specific objective is achieved by conducting the class in English and not in Spanish or vice versa. This aspect of the training is closely related to cue-response training (see below), since the rationalization is based on the identification of the situational cue and the corresponding response to it.

For the purpose of clarification the following example may be appropriate:

> A child has frequently shown difficulties in rendering in L_1 what he has heard in L_2. The pertinent cue is *translatability* and the teacher, in response to that cue, asks the child to reinterpret her words to a Spanish-dominant student:
>
> T: Tomorrow, we will see that the seed has grown. Now when we add water to a seed, what happens to it?
> S: It cracks.
> T: Right, it cracks. And what comes out of the seed?
> S: The stem.
> T: Very good. ¿Por qué no le dices a Juan lo que acabas de decirme?
> S: Cuando le echamos agua a la semilla, ella se revienta y sale el tallo.

Cue-response Training

Before the teacher can rationalize each language switch, she must familiarize herself with the system of cues as listed above (see Table 1). Sixteen cues are distributed there unevenly over four socioeducational areas. One such area, *classroom strategies*, consists of the cues *concept formation*, *review*, *attention capturing* and *praise* or *reprimand*. When any one of these cues is identified, the teacher switches from the language in which she is teaching to the bilingual's other language. The smoothness of the transition as she switches languages must not interfere with the continuity of the lesson and the reasoning that she may offer to justify the switch could be as follows:

1. the need for *concept development* in L_1; hence, the switch from L_2 to L_1.
2. the use of L_2 for the *review* as the lesson had previously been taught in L_1; hence, the switch from L_1 to L_2.
3. the switch to L_1 in *capturing the attention* of those who were distracted; hence, the switch from L_2 to L_1.
4. the need for immediate *praise* (or *reprimand*); the switch to L_1 serves here the purpose of separating the teacher's assessment of the child's performance from the remainder of the lesson; hence, the switch from L_2 to L_1.

Similar justifications apply for the cues of the other areas, *curriculum*, *language development* and *interpersonal relations*. Rationalizations for the switch in response to the remainder of the cues may take the following forms:

1. the use of L_2 reflects the criterion of *language appropriateness* as L_1 was found not to be the proper code to use; hence, the switch from L_1 to L_2.
2. the use of L_1 to demonstrate the closer association of that code to the *topic* under consideration; hence, the switch from L_2 to L_1.
3. the choice of L_2 to discuss the content of the *text* written in L_2 assigned for reading; hence, the switch from L_1 to L_2.
4. the need to provide more practice in L_2 to a child not proficient enough in that code; this is a matter of *variable language dominance*; hence, the switch from L_1 to L_2.
5. the use of L_1 to ensure *lexical enrichment*, since, without a proper vocabulary, the subject matter cannot be fully comprehended; hence, the switch from L_2 to L_1.
6. the choice of L_1 to render a concept that has been explained in L_2 in order to promote *translatability*; hence, the switch from L_2 to L_1.
8. the need to use an *intimate* register as a personal matter is being approached; hence, the switch from L_2 to L_1.
9. as a *courtesy* to the non-dominant L_2 speaker, a switch to L_1 is required; hence, the switch from L_2 to L_1.
10. as the child shows *fatigue*, the teacher seeks to approach him in the code he is most comfortable in; hence, the switch from L_2 to L_1.
11. the need to develop greater *self-awareness*, the teacher uses the language that the child tries consistently to avoid; hence, the switch from L_2 to L_1.
12. the use of the most informal register of L_1 to establish *rapport* with a child needing personal attention; hence, the switch from L_2 to L_1.
13. none of the above but a switch still occurs because of the teacher's *free choice*.

To gain gradual control over language alternation in the sense suggested above, the teacher undergoes a step-by-step training that beings with the observation of the NCA method and ends with the implementation—more exactly, the reimplementation—of her own lesson:

A. *Observation*: the teacher observes the NCA method in action by viewing videotaped demonstration lessons or audiotaped recordings of such lessons;
B. *Transcriptions*: the teacher transcribes those portions of NCA lessons where switching occurs by following this sequence: the sentence before the switch—the sentence showing that a switch has occurred—the sentence after the switch.
C. *Coding*: the teacher analyzes the switches in the transcriptions by suggesting the cues that were instrumental in triggering the switch. Following the number-letter convention in Table 1, the teacher identifies a response to a cue as 1a (concept formation), 2b (topic), 3c (translatability), and so forth.
D. *Planning*: the teacher plans her lesson in advance by writing out the

anticipated teacher-student verbal interactions (see below).

E. *Implementation*: the teacher actually teaches the proposed lesson but makes certain adjustments in light of the children's actual performances. This lesson demonstration is videotaped for training purposes.

F. *Self-Evaluation*: the teacher views her taped lesson and critiques it in light of all the relevant variables, such as, time, cues, own responses, children's responses, leadership in switching, smoothness of switches, lesson continuity, etc.

G. *Re-implementation*: the teacher teaches the same lesson a second time and tries to correct any shortcomings that she observed before. The taping is now critiqued by peers and/or trainer.

Lesson Planning Training

After the lesson content is selected and the same is found appropriate for the grade level for which it is intended, the teacher writes out the lesson in only one language. The monolingual lesson plan shall contain the actual words that she intends to use as well as the answers that she hopes to receive from her students. As she reexamines the lesson plan, she earmarks parts of the lesson for language alternation on the basis of the cues that are likely to emerge. Finally she rewrites the lesson plan as a tripartite plan; that is, she places the English portion of the proposed lesson at the extreme left and the Spanish portion at the extreme right. The middle column serves the purpose of rationalizing the switch or simply listing the cue-response number-letter sequence. Table 2 is part of a sample of a lesson plan that the teacher follows as she implements the planned lesson.

Lesson Implementation Training

This portion of the training is by now self-explanatory. The teacher implements her lesson plan but adjusts it to the children's performance as needed. After the self-observation and self-critiquing of her videotaped lesson, mentioned above, the teacher identifies her successful and unsuccessful strategies with special emphasis on the techniques meant to bring about the language switch. She addresses therefore the following questions:

1. Was it necessary to label the language in order to accomplish the switching?
2. Which indirect procedures were successful in producing the switch?
3. What was the general pattern of verbal interaction between teacher and students as well as between students only:

Her answers to these questions may still indicate that additional clarifications are in order. Problem areas of this nature are important to address so that the teacher feels comfortable in the use of the NCA method.

Problem Areas

The teacher who seeks to implement any new instructional method is first overcome by the number of distinct features that she must incorporate in her lesson. How can she possibly remember them all? After some wavering, they fall into place and the method becomes second nature to her.

TABLE 2

		T: Do you remember what we have been learning about air? Robert, what have we learned about air and weight? S_1: . . . that air has weight. T: Very good. Isela, what have we learned about air and space? S_2: . . . that air takes up space.
T: ¿Se acuerdan del experimento que hicimos el otro día con el vaso y la toallita de papel? T: Lorenzo, me puedes decir lo que hicimos? S_3: Pusimos una toallita en un vaso y no se mojó el papel.	Review	T: Very good.
T: Muy bien, Lorenzo.	Conceptual Reenforcement	T: Who can tell me now why the paper didn't get wet? S_4: . . . because the air in the cup didn't let the water in.
T: Muy bien, Laura, Tú sí pusiste atención. El papel no se mojó porque el aire ocupa espacio o lugar en el vaso y no permite que entre el agua.	Praise	
	Text	T: Now, I want you to turn to page 18—a one and an eight—Here you will see another experiment.

The NCA method is hardly different from other methods in this sense. The language attitudinal perspective, the awareness of situational cues, the language switch response, the self-monitoring,—they all become natural and thus easy to handle. And yet, some questions may still linger on and the following inventory of problem areas, each one followed by a brief comment, suggests that the creative bilingual teacher carries in her own mind the answers to these questions. The method teacher can do little more than alert the teacher to the issues that must be resolved according to the circumstances of each individual situation.

Appropriateness of use. The NCA method is appropriate whenever content receives primary attention over form. The internal structure of the lesson content may vary however depending on the individual school subject to be taught. No systematic studies have been made so far to characterize the switching strategies that lend themselves to, say, social studies but not to math. Since discrete tasks are more common in math than they are in social studies, it appears that the sequence of switching events in the former tends to be more mechanical than in the latter. In other words, the teacher may wish to alternate languages as she drills different math problems, whereas in social studies, she is more conscious of topical or conceptual developments and their implication for language switches.

Switching and translation. The switching from one to the other language is a pervasive strategy throughout the method, whereas translation is not. However the latter does occur in response to the cue *translatability* (see above). The major difference between the two notions is seen in the treatment of the message conveyed. In switching, two different messages occur, each one in a different language; in translations, the same message is rendered first in one language then in the other.

Switching	Translation
T: Does the circle have corners?	T: Does the circle have corners?
S: No.	¿Tiene esquinas el círculo?
T: Where do we find corners?	S: No.
S: ?	T: Does the square have corners?
T: ¿Tiene esquinas el cuadrado?	S: ?
S: El cuadrado tiene cuatro esquinas.	T: ¿Tiene esquinas el cuadrado?

Time factor. It seems to be particularly difficult for the teacher dominant in one language to assess accurately the time that she actually stays in her weaker language. She tends to use it less and yet believes that she has used it as often as the stronger language. Clocking herself as she teaches is obviously not feasible but by recording her lesson, she can easily keep track of the time factor. She eventually acquires a more accurate notion of her language use and can discontinue the time verification process. The timing of language use, however, differs somewhat from self-monitoring. This latter self-assessment attempts to ensure that each language segment, her own as well as the child's, is long enough to display the structural and lexical cohesiveness of the language used. Unless this cohesiveness is achieved, proficiency in the language cannot be demonstrated.

Class talk. Class observations tend to show that teachers talk in excess and children to not talk sufficiently. Teachers seem to use the class setting as a means to display their teaching ability, whereas the setting should serve to demonstrate the children's ability to learn. This is even more true when proficiency in *two* languages must be acquired. Assessing the extent of children's talk adds therefore another perspective to the monitoring process. If the result is unsatisfactory in this respect, the teacher must give some special thought to decrease her role as talker and increase the children's role as active participants.

Teaching effort. Despite the monitoring duties described above, the teacher must teach and the children must learn the subject of instruction. The effort on the teacher's part seems overwhelming when the NCA method is used but only if she is not completely familiar with her subject. The more she masters the subject, the more time she has to monitor herself and her children's performance.

Language labeling. The child's willingness to switch languages is the result of internalization of sociolinguistic rules but not of specific instructions by the teacher. Labels like *English* or *Spanish* are better avoided, so that the child may acquire the feeling when a given language is appropriate. Note the difference between the following two techniques:

T: El Río Grande separa los Estados Unidos de México. Now let's do the rest of the class in English. Where is the Mississippi?
S: In the United States.
T: Have you ever seen that river?
S: Yes, when I was in New Orleans.

or

T: El Río Grande separa los Estados Unidos de México. The Mississippi River is another important river.
Do you know where that river is?
S: In the United States.
T: Have you ever seen that river?
S: Yes, when I was in New Orleans.

In the first dialog, the child switches to English because the teacher tells him so. In the second, he simply notes that the teacher's medium of the instruction has suddenly changed, so he follows her lead. He may not consciously understand the notion of language appropriateness ("Río Grande" as opposed to "Mississippi,") but he knows that the rule is to answer in the language in which one is addressed.

Smooth transition. The absence of a transitional expression, in speaking as well as in writing, is a hurdle to comprehension. By the same token, its presence facilitates, for the listener or the reader, following the line of thought. In a bilingual setting, it also bridges the gap between the two languages. Note:

T: We can count by five's as we look at the clock. Five, ten, fifteen, twenty, twenty-five, thirty, thirty-five, forty, forty-five, fifty, fifty-five, sixty.
S's: (repeat counting by fives)
T: Ahora, vamos a contar para atrás de cinco en cinco empezando con el número sesenta.
S's: Sesenta, cincuenticinco, cincuenta, cuarenticinco, cuarenta, treinticinco, treinta, veinticinco, veinte, quince, diez, cinco.

The continuation of the counting task as well as the transitional word *ahora* contribute here to the smoothness of the transition, so that the children may not even realize that a language switch has occurred.

Feeling secure in language use. It is quite easy to determine a degree of security that a bilingual experiences when he speaks either language. The feeling of security is not the result of his language proficiency alone but also a function of his attitude toward that language. The prestige in which he, not the society as a whole, holds the language in question is reflected in the way he speaks it. Hence, the prestige factor becomes the key for the teacher in order to communicate effectively in the child's home language. The prestige, on the other hand, grows in proportion with its use, independently as well as comparatively speaking. Thus, the weaker language must become equally strong in order to compete successfully with the alternate language.

The monolingual teacher. An interesting experiment conducted in one of the NCA workshops for the Laredo United Independent School District has shown the feasibility of this method through a team-teaching effort. The bilingual and the monolingual teacher, the latter having only receptive Spanish-language skills, can function together as a single entity such that the Spanish-language portion of the class is taught by the bilingual and the English portion by the monolingual teacher. Her passive knowledge of the Spanish language allows the monolingual teacher to know what transpires in the class and when it is appropriate for her to continue in English. The advantages are affective as well as language developmental. The close and effective relationship between a majority and a minority person is most meaningful for the child for his bicultural development. On the other hand, the exposure to the English spoken by a monolingual allows the child to draw his own conclusions about language variation, monolingual as opposed to bilingual behavior, societal structure and many other related issues.

Over-implementation. The use of NCA method during the language development component of the program is the result of excessive enthusiasm about the approach and may lead to confusion concerning the grammatical structures or the lexica of the two languages. Here, the method is over-implemented and caution must be taken to separate the languages more rigorously. On the other hand, if, within the ESL or the Spanish language arts component, activities are performed or discussions are conducted that go beyond the actual language development, some switching may be appropriate. The author has observed an excellent English language class in which the teacher developed concurrently the writing of book reports in English and Spanish. This activity fell into the time bracket of the ESL class but was obviously an application of language arts to a specific purpose.

Materials. The materials for classes where the NCA method is implemented have not been, in the past, any different from other bilingual materials and it has always been the teacher's responsibility to modify them according to her needs. More research on the NCA method seems to be necessary to determine whether special materials should be developed. Texts printed in two languages, in the fashion of the bilingual novels printed in Spain and elsewhere, might be an alternative. Then, children and teachers might extract from there whichever language they feel is most appropriate for a specific learning-teaching task.

Maintenance-transition. The implementation of the NCA method during the primary years of the child's education does not conflict with the transitional policy of the public school system. Obviously, the child cannot continue participating in a bilingual program when bilingual education is no longer available. The child, accordingly, has become proficient in the English language, that is, he has been "mainstreamed" by grade 4 or 5 or whichever the grade level of termination of bilingual instruction may be. The end of bilingual instruction in the public school system is more a political than an educational decision. If on the other hand, the child desires to maintain her vernacular in outside-the-classroom situations, this is a personal decision that does not affect public schooling. The maintenance orientation during the primary years has borne the fruit of bilingualism as a side product that makes the child more secure about his individual role in American society.

Longitudinal evaluation. The effectiveness of the NCA method must be demonstrated through a multi-year implementation of the approach and a carefully designed evaluation of this method in light of the obtained results. If children become proficient in the English language during their primary years of public education, as this is here predicted, and have developed into well-adjusted youngsters who can function successfully in an only-English classroom, then the approach has been successful. The retention of their vernacular and the development of a nonvernacular version thereof is an additional asset for them that in no way shortchanges the main objective of publicly funded bilingual education, that of the acquisition of English language proficiency by limited English language proficiency (LEP) children belonging to our ethnic minority populations.

CONCLUSION

It has been the objective of the present paper to provide a detailed description of the NCA method with special emphasis on methodological issues and the teacher training perspective. The broader use of the method holds a great promise for a more effective preparation of the bilingual child, since it incorporates sound linguistic, psychological and educational principles that will allow the child to adjust to the broader situation of his adolescent life, that of the functional distribution of his two languages as he achieves academically in his school. The favorable reaction from bilingual teachers in this region seems to point to the viability of concurrent teaching as long as it is a highly structured and carefully controlled method. More research however must be conducted, especially in the area of material development in order to assist the teacher more effectively in the implementation of the method.

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ED212135

TOWARDS THE PRACTICE OF CULTURALLY RELEVANT TEACHING*

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This paper is a bold effort to apply a number of anthropological concepts towards improving the teacher-learner process within the context of bilingual/multicultural classrooms. The basic thrust of the approach is an attempt to utilize culture process as the primary means of analyzing cultural dynamics between the teacher and learner. It is hoped that the approach and strategies developed here will be a useful way to account for the change and conflict that arise when there is interaction between people of differing life styles.

Our aim is to recognize and understand how cultural knowledge changes from the interactions between teacher and learner, and to attempt to utilize these dynamics as the basis for devising ethnographic strategies that teachers can use to construct more suitable learning environments for all learners.

The central concept to the approach is culture as process. This concept is defined as that knowledge which people (especially students) use in their everyday life situations. This definition rests on the anthropological assumption that all human knowledge is cultural.

Our intent, then, is to formulate strategies that will facilitate the uncovering of those cultural cognitive mappings that are formed during the process of individual-social development. These cultural cognitive mappings should allow us to gain an insight into the cognitive makeup of the individual learner. Cognition, according to Cole and Scribner (1974), is "those processes by which humankind acquires, transforms, and uses information about the world." Using this broad definition of cognition as our guide, we hope to identify those conceptual patterns within the learner's cognitive framework that will be of importance in teacher-learner interaction. The conceptual framework for this process should provide easy access into the learner's personal family and social history; the learner's historical context can then be used as a network of categories for assessing the cognitive process. Our goal is to obtain information that will be useful to the teacher in building a more suitable learning context. This learning context, in turn, should facilitate the learner's cognitive process of learning how to learn.

We have opted to use the concept of cognitive map as a metaphoric expression of how to view and explain the cultural knowledge that the learner and teacher bring into the encounter setting—the classroom. The concept of cognitive map, along with the concepts of culture system, cog-

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nitive learning style, equivalence, transaction, agenda, and cultural scene, form the thrust of our theoretical framework. The definitions of these concepts are as follows:

Cognitive Map—Represents the cultural categories or domains that comprise a person's cognitive framework. This framework serves to classify the shared sociocultural knowledge of the individual.

Culture System—Refers to a group of persons (actors) who come together and interact according to defined rules, roles, and outcomes. This implies a body of shared knowledge that allows the system to function.

Cognitive Learning Style—The primary mode through which individuals learn, classify, and interpret information. Learning styles have a direct relationship to socialization/enculturation practices.

Equivalence—The property of human interaction that allows for successful outcomes when two persons interact. It can also be said that cognitive categories or their particular attributes have an equivalent meaning or value.

Transaction—The process by which cognitive maps may change in an encounter or series of encounters; three aspects are involved in the transaction process: (1) the forms of communication, (2) the kind of cognitive change, and (3) the direction of that change (Gearing, 1976).

Agenda—That particular aspect of a person's cognitive map that enables an individual to make existential decisions in an encounter situation. Gearing (1976) refers to this aspect as the "dimension of personal operationalization."

Culture Scene—Thought of as a region or area of an individual's larger complex cognitive map; it is the knowledge that actors employ in a social situation and is thus subject to observation (Spradley & McCurdy, 1972).

The organizational plan of this paper falls into three major areas: (1) theoretical construct, (2) teacher-learner model, and (3) application of theory. The first section will discuss in greater detail the concepts and theory that make up the culturally relevant teaching approach. The second section will focus on the formulation of an implementable teacher-learner model based on the theory in the first section. The third section will discuss the application of the theory and the teacher-learner model within an actual bilingual classroom setting.

THEORETICAL CONSTRUCT

Culture System

Our first approach is to expand our basic understanding of the process of cultural transmission as it relates to the teacher-learner interaction. As our starting point, we will consider the school and the classroom setting as a culture system. The larger community, outside the school setting, is also composed of different culture systems. By definition, then, a culture system refers to a group of human beings that come together and interact according to defined rules, roles, and outcomes.

George Spindler (1974) sees the culture system operating as long as acceptable behaviors produce predictable and desirable results, and unacceptable behaviors produce predictable and undesirable results. This predictability in behavior is possible because the culture system is built on and relies upon instrumental linkages. These instrumental linkages consist of relationships between the activities and goals of the culture system and are systematized and interrelated. The culture belief systems, such as an educational institution and its processes, help to support the credibility of these linkages. According to Spindler (1974), the culture system functions on the transmission of these linkages: what the instrumental linkages are, how they work, why some function for individuals in certain relationships and not others, and why everyone can not make the same instrumental choices.

Through the cultural transmission of these linkages, the individual gains a cognitive structure that is a kind of working model of the cultural system (Spindler, 1974).[1] Spindler further maintains that this cognitive map (that the individual obtains by being a member of a cultural system) permits the individual to maintain control of his/her life space as long as the established instrumental relationships in the system continue to function.

Our fundamental premise is that learning, and that which is learned, cannot be understood apart from its sociocultural context. All learning, therefore, encompasses the sociocultural context of the learner, and embraces the processes of schooling, enculturation, and socialization. Our theoretical framework is addressed to the process of education as it occurs in the schooling situation; however it takes into account the learning that has taken place and continues to occur in the ongoing processes of enculturation and socialization. Our framework attempts to account for the learning that the learner brings with him/her to the school setting and how this learning, conceptually referred to as the learner's cognitive map, influences the learning that is to take place during the teacher-learner interaction.

Knowledge about a culture system is transmitted to the younger members of that system through the processes of enculturation and socialization. We want to point out that the schooling process is also an integral part of that enculturation/socialization process. It follows, then, that all knowledge is by definition cultural, by the simple virtue of having originated within a culture system. Our concern here, however, is with how knowledge gets transmitted during the teacher-learner interaction. Therefore, we must stress the following understanding—that the transmission of knowledge is an ongoing process and that the knowledge the learner brings to the school, in the conceptual framework of a cognitive map, will affect the teacher-learner interaction.

We believe that the schools in the United States, to a large extent, have ignored the cognitive framework the learner brings to the teacher-learner encounter. The common notion that exemplifies this conception is expressed in the folk belief that each individual learner, when he/she enters school, is embarking on a lifelong career of learning. The cognitive framework that has developed for the individual learner through interaction with members of his/her cultural system since the time of birth to the time that formal schooling is initiated, is, to a large extent, ignored. Very little recognized account is placed on identifying those patterns of learning that have been formed through interaction with other humans outside of schooling. Cognition is somehow seen as existing outside of human interaction. We will start with the premise that Cole and Scribner (1974) espoused when conceptually relating culture and cognition, ". . . [while] it is fanciful to conceive of man existing outside of social life, we can not imagine any intellectual function that does not have a sociocultural character."

Cognitive Maps

At this point, we would like to clarify further the use and conceptualization of the term cognitive map. The use of this term is central to the further development of our theoretical framework, as it represents a manipulative concept.

We use the term cognitive map, to represent the learner's intellectual framework. Organizationally, a cognitive map can be visualized as consisting of numerous cultural categories or domains. These categories comprise a person's intellectual framework in which shared sociocultural knowledge gets classified. It is this shared knowledge aspect that gives utility to the concept. Spindler's emphasis on the predictability of behavior within a culture system is apparent here, and gives the concept of cognitive maps a practical value in the classroom setting.

An individual's cognitive map represents the knowledge of various sociocultural systems as perceived and used by the individual. This cultural knowledge is intellectually classified into cultural categories or domains and may be thought of as a schematic of how knowledge gets patterned, valued, and manipulated by the sociocultural groups concerned. Furthermore, the cognitive map of the individual is never static. As a result, no two individuals will have identical cognitive maps of their social system. Nonetheless, the derivation of the individual's cognitive map and the social expression of it are bounded and supported by the norms of the sociocultural system (Spindler G. & Spindler L., 1965).

Equivalence/Agenda

Central to the functioning of cultural systems and cultural transmission is the notion of equivalence. Equivalence, according to Gearing (1976), can be said to be operative whenever two individuals interact:

> . . . the two parties in any encounter bring to that encounter their cognitively mapped prior experiences, that their respective mappings will in part be drawn upon, that the two mappings will reveal in those germane parts various degrees and kinds of fit and ill-fit, and that the mappings and their fit typically change in the course of an encounter or series of encounters (Gearing, 1976).

Of primary importance to our framework are the two realms that Gearing outlined in his general theory: (1) the content of each cognitive map (teacher and learner), and (2) the kinds of fit between those two maps in an encounter situation.

Taking the realm of content first, Gearing has identified four aspects that comprise the content of any cognitive map. The first of these aspects is setting. In an encounter situation, as between the teacher and learner, both parties bring with them a sense of setting that defines the kind of encounter that will transpire. A child's mapped sense of setting is directly influenced by his/her cognitive learning style. The fewer years of formal school exposure the child has experienced, the less probability there is of intrusion on the primary learning style by other styles fostered by formal educational systems. The learning style remains more directly linked to the home/community process of enculturation than to the process of enculturation-socialization fostered by the school. The teacher, however, having many years of formal schooling, will probably have a preconceived notion of "setting."

In order to make identification of the mapped categories of this aspect possible, Gearing has suggested classification of activities into larger domains, such as work and play, that will provide the learner and teacher with a more complete sense of setting.

A second important aspect in the teacher-learning encounter is a "mapped sense of the nature of the world . . . human and nonhuman" (Gearing, 1976). This realm includes those categories into which things may be classified, as well as perceptions of logic (i.e., the interconnectedness of things). The importance in identifying this "mapped sense of the world" for both teacher and learner is in discovering which maps or portions of maps may be said to be equivalent or nonequivalent. In turn, this will facilitate the monitoring of the direction and degrees of change resulting from transactions.

A third aspect related to the cognitive map content, which is part of the teacher-learner encounter, includes those mappings of "the ways men generally are sorted into categories of social identity and how such categories are connected in role relationships, of differential power and the like" (Gearing, 1976). This notion will enable us to devise a procedure for better understanding the social structure of the learner's community and the implications this has for classroom interactions.

The final aspect that plays a part in the teacher-learner encounter is what Gearing (1976) calls "implied agenda, an expectation as to how the encounter promises or threatens to unfold." This mapped sense of agenda is closely related to the other three aspects of the individual's cognitive map. Gearing (1976) refers to it as the "dimension of personal operationalization: What do I want? How important is that to me? What are his options? My options?" The other three realms directly influence the implied agenda. In order to obtain a useful perception of the learner's cognitive map, the teacher must consider all four aspects and their interplay in formulating the contents of the cognitive map.

Ethnography and the research tool of participant observation are central concepts to the technique of discovering pertinent information on a learner's cognitive map. To help us discover this pertinent information we have adapted a technique used by Paulo Freire in his work with literacy programs. The technique makes use of simple line drawings to elicit verbal responses from learners.[2] A number of specific questions are used along with the line drawings in order to get specific information in regard to the aspect of agenda and world view. The information obtained through the use of this technique will be discussed in more detail in the "Application of Theory" section.

Suffice it to say that the notion of equivalence is a useful notion and can become a useful concept in the teacher-learner encounter, especially when considered within the context of cognitive learning styles and cognitive maps. Once identified, the cognitive map of the teacher and that of the learner must be compared for equivalence (continuities) and nonequivalence (discontinuities). Our assumption is that if the cognitive map of the teacher and that of the learner is equivalent, the learning encounter will have a greater tendency to be successful than if there were discontinuities and nonequivalence.

Learning Styles

Cognitive learning style is defined as that mode of functioning through which an individual perceives and organizes information. Witkins has identified two factors that influence and differentiate perceptual cognitive styles: (1) sociocultural factors, and (2) environmental factors. The sociocultural factors are directly related to socialization-enculturation practices (Cohen, 1976). These involve such practices as the opportunity given the child to achieve separation or independence, particularly in family situations, and the way in which adults treat the child's behavior (Cohen, 1976). Cohen (1976) points out that there is differentiation in perception related to socialization; for example, when the child is permitted to form his/her own standards of behavior and is held accountable for his/her actions, the result is differentiation.

We have attempted to get information on these sociocultural factors through the use of a home visit checklist and a teacher checklist.[3] A comparison of home culture system practices and classroom culture system practices is a useful method to identify influences that sociocultural factors have on the child's learning and perceptual behavior. The other factor that differentiates perceptual cognitive style is environmental. We have found that environmental factors are very complex phenomena and very difficult to differentiate, especially in an urban setting. Cohen (1976), in discussing these factors, points out that it is "the degree to which the environment is variegated and contains a lot of . . . 'structure' as contrasted with one that is homogeneous and gives very few structural cues" that will yield pertinent information. For classroom use, we have found that "word search" and "embedded figure" activities yield much more useful information for the teacher.[4]

Research has shown that differences in the learning styles used by the teachers and those used by the learner can materially effect the transmission of information. Children have preferred cognitive style encounters. Its applicability to the teacher-learner encounter rests in the teacher's need to transact a body of knowledge to each individual learner. This concept goes hand in hand with the concept of equivalence that we have previously discussed.

Through transaction, the four realms of a person's cognitive map may change. Gearing (1976) calls attention to at least three aspects that are involved in or will influence the transaction process: (1) the forms of communication, (2) the kind of cognitive change, and (3) the direction of that change.

Considering the first aspect, we know that the classroom is a recognized formal setting where transaction is conscious and structured. The teacher has goals and objectives of what needs to be transacted. The learner, too, may have expectations of what is to happen during the encounter. In the bilingual classroom, the communication aspect may further be compounded by use or non-use of language symbols that may or may not be a part of the cognitive map of the learner or the teacher may be linguistically or culturally different. The transactions between teacher and learner operate as either verbal or nonverbal interchanges and need to be monitored to assure successful outcomes.

In the second situation, Gearing (1976) has isolated the kinds of changes that occur: (1) total boundary system change, (2) creation of new boundaries where none existed before, and (3) change through elaboration and combinations. The rate of change in these areas goes from least frequent for number one to most frequent for number three. Change also occurs in the area of logic, i.e., there are changes in perceived possibilities of connection among parts.

Thirdly, the change that occurs is made in a particular direction. In application to the teacher-learner encounter, two types of changes have been noted: (1) the maps become similar, or (2) the maps diverge (Gearing, 1976). In the schooling situation, the expected outcome is for the cognitive maps to become similar with respect to a body of knowledge. However, for varying reasons, the cognitive maps of teacher and learner may diverge and result in nonequivalence.

In the bilingual and culturally different classroom where efforts may be made to meet the needs of the culturally different, LaBelle (1976) has emphasized that the classroom organization and structure may be a reflection of the dominant culture. This condition results in the lack of cultural continuity for students. Instead, the schools promote cultural change and force learners to cope with conflict of value orientations, which usually results in the alienation of the students.

Culture Scene

The culture scene concept provides us with the ethnographic means for discovering particular knowledge that individuals use in social situations. A social situation, at minimum, is comprised of places, people, and activities. The culture scene very closely parallels the social situation but differs in definition. Culture scene, as defined by Spradley and McCurdy (1976), is the knowledge that individuals or actors use in a social situation. When we consider that our goal is to discover the knowledge people have learned and use to organize their everyday life, the concept of culture scene takes on greater significance. Furthermore, a culture scene may be conceptually thought of as representing a region or area of an individual's larger complex cognitive map (Spradley & McCurdy, 1976). This conceptualization lends itself to schematically visualizing a learner's cognitive map as consisting of a number of culture scenes that vary in size and involve different persons, that is traced directly to the child's home and community socializing experiences. What this means to the classroom teacher is that there are certain clues to learning styles that can be perceived in the way children (a) communicate and relate to others, (b) are motivated for achieving, and (c) perceive and think (Ramirez, Castañeda, & Herold, 1978). Therefore, this variable needs to be taken into account in the design of any learning encounter.

There are several easy assessment tools for identifying learning styles of both teacher and learner, and a variety of formal assessments that may be used for the identification of the teacher's learning style. Games such as word searches and embedded figures can provide insight into learners' learning styles. Those that we have used and referred to in the training manual are only a sample of those available for general use (see note 4).

Identification by the teacher of his/her learning style is as important as assessment of the learning style most comfortable for the learner.

In summary, it can be said that:

1. Different persons use different styles in learning.
2. Learning styles can be identified for both the teacher and the school child.
3. Differences in style create barriers to teacher-learner communication.
4. Teaching strategies can be devised to take advantage of differences in style.

Transaction

The notion of transaction is taken from Gearing. We will try to give it greater usability in terms of a working concept within the teacher-learner encounter. Transaction has been defined by Gearing (1976) as a process by which cognitive maps may change in an encounter or series of interactions, the places or locations where these interactions take place, and the objects used in the interactions.

Culture scenes for learners in a school situation would be numerous. Teachers could observe learners interacting with each other in the classroom, the school grounds before, during, and after school hours, and in the community-home environment. Selective choice will have to guide the teacher in her/his observations and interactions and should, by necessity, relate to the transacted domain.

The teacher can develop the necessary skills to observe, describe, and identify significant aspects of a learner's cognitive map by learning and utilizing the ethnographic tool of participant observation. Ethnographically, cultural categories comprising a learner's cognitive map can be identified and the cultural knowledge that is organized within those categories can be used to maximally benefit the teacher-learner encounter.

In the following section, the theory and concepts we have been discussing will be developed into an implementable model. The model has been developed with the help of Dr. Barbara Mickey, professor of anthropology and education at the University of Northern Colorado.

Teacher-Learner Model

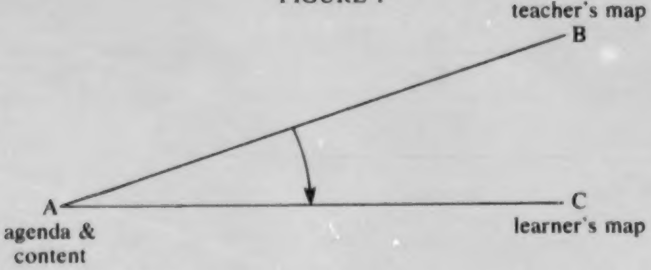
The basic thrust of the model is to provide a procedure by which teachers, when trained, would possess the necessary skills to: (1) narrow the distance between the cognitive maps in the teacher and learner, and (2) design the encounter so that the learner would find reception both possible (relatable to his/her cognitive map) and acceptable (relatable to his/her agenda). To accomplish this, the teacher must be able to:

1. Define:
    A. The agenda and the content of the transaction.
    B. The portions of the teacher's cognitive map that are relevant to the success of the transaction.
    C. The portions of the learner's cognitive map that are relevant to the transaction.
2. Devise procedures to establish conceptual linkages between "B" and "C" with reference to "A".

Figure 1 expresses the problem graphically. The objective of the transaction is to reduce the angle of Figure 1 with reference to "A". The procedural model should provide the means to accomplish this in as simple and economical a manner as possible, for teachers in the classroom do not have time for long contemplation of the problem and for theorizing. The classroom is a dynamic place and transaction must move forward efficiently.

The first step in the procedure is to discover the extent of the distance between the background of the teacher and that of the learner in so far as the content, motive, and coding of the cognitive maps of each are related to the domain of the intended transaction. It is possible that the equivalence between the two cognitive maps will be maximized (Figure 2), in which

FIGURE 1



case linkages for the transaction are already in place. On the other hand, there may be minimal or no linkages (Figure 3), in which case the teacher must find ways to establish linkages, if the transaction is to succeed and learning is to take place. In between these two extremes there are, of course, various degrees of linkages. The teacher must identify the amount and points of linkage to facilitate a successful transaction.

FIGURE 2

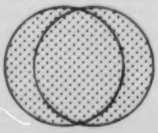
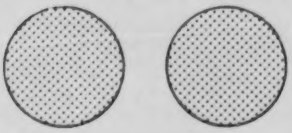


FIGURE 3



The following procedural model identifies the essential elements and steps to follow in establishing suitable linkages. There are two major steps in the process: (1) Identifying the extent and quality of the equivalence between teacher and learner cognitive maps. To accomplish this the teacher needs to develop internalized habits of directed ethnographic perception and patterning. (2) Designing the encounter to maximize the success of the desired transaction. The total situation must be considered and the design closely related to the findings in Step 1.

Model and Procedure

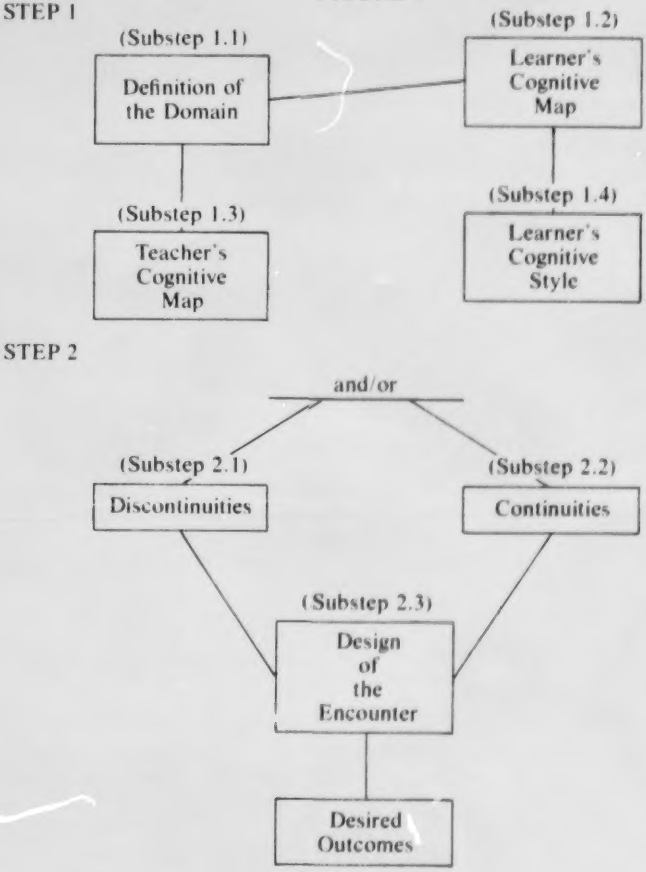
The model presented here provides an outline of the elements and activities necessary to accomplish the objective stated in the introduction to this section. It derives from a systematic analysis of the process of transmission as presented by Gearing and his colleagues (1976).

Step 1, identifying the extent and quality of the equivalence, provides the background for the transaction. It tells the teacher where he/she is with regard to the domain (subject to be transacted), and where the learner is with regard to the same material. This activity requires four substeps:

1. Identify and define the domain.
2. Define ethnographically the content in the learner's cognitive map that is relevant to the domain.
3. Define ethnographically the content in the teacher's cognitive map that is relevant to the domain.
4. Define the learning and cognitive styles of the learner.

The model is diagrammatically shown in Figure 4. To proceed with Substep 1.1, the following questions need to be addressed:

FIGURE 4


STEP 1
(Substep 1.1)
Definition of the Domain
(Substep 1.2)
Learner's Cognitive Map
(Substep 1.3)
Teacher's Cognitive Map
(Substep 1.4)
Learner's Cognitive Style
STEP 2
and/or
(Substep 2.1)
Discontinuities
(Substep 2.2)
Continuities
(Substep 2.3)
Design of the Encounter
Desired Outcomes

1.11 *What is to be transacted?* The teacher will need to establish the intended outcomes of the transaction. These may include content, attitudes, feelings, intentions, behavioral modifications. The intended outcomes should be stated as explicitly and concretely as possible so that specific linkages with the cognitive maps of learner and teacher can be identified.

1.12 *What are the boundaries of the transmission?* Clearly everything about a domain will not be important to the transaction. What is the intended focus? What can be safely ignored?

1.13 *What specific concepts are involved in the intended transaction?*

Substep 1.2 involves the ethnographic identification of specific information, attitudes, perceptions, beliefs, habits, and behaviors in the learner's cognitive map. There are a number of activities by which the knowledge and understanding can be achieved. Some are general activities that, like the identification of learning and cognitive styles, can be identified early in the school year. Others are specific to the domain of transaction and need to be gathered in direct preparation for the transaction. In either case, selection must occur so that the details can be systematically related to the design of the encounter.

Using participant observation techniques (Bruyn, 1976), and the nonparticipant observer grounded theory approach (Smith & Pohland, 1976), the teacher can begin early in the year to visit the community and family of the learner. In this way the teacher can develop in-depth knowledge and understanding of the cultural pattern, behaviors, beliefs, values, and perceptions that form the cognitive map of the specific learner. Training in participant observation techniques will be needed in order for the teacher to use this method effectively.

Early testing of the learner will also help provide insight into the content of the learner's map. Attitude inventories are especially useful for this.

Several ongoing activities will keep the teacher attuned to the cognitive and affective growth of the learner.

1.21 Participant observation and analysis should be used as continued interaction with the learner takes place.

1.22 Observation of learner behavior in relationship to peers and adults will give additional insights.

1.23 Library research related to specific ethnic, economic level, or other groupings relevant to the learner provide insights to the cognitive map of group members.

1.24 Testing for specific knowledge related to the domain of the transaction can be used in preparation for the encounter. A useful technique is the use of line drawings.[5] By using this technique the teacher can elicit pertinent information, including values and emotional responses from the learner.

Substep 1.3 includes procedures to identify and profile the cognitive map of the teacher as it relates to the domain of the encounter. The teacher must use objective techniques to become conscious of that portion of his/her map that is relevant to the encounter so that it can be checked for discontinuities (nonequivalence) against the information in the map of the learner.

In Substep 1.4, the learning and cognitive styles of the learner are identified. This information is necessary so that information can be channeled through pathways already available to the learner for receiving information effectively. Information about learning and cognitive styles should be a part of the general knowledge about the learner made available to the teacher early in the assignment period. At the beginning of the year tests to identify style should be given. There are a variety of tests available. The tests used with our learner population have been the "word search" and "embedded figure" activities already discussed (note 4). The information derived from use of these instruments need not be gathered for each transaction problem. Rather it should be done early in the learner's educational career and should be readily available to the teacher.

Designing the Encounter

The design of the encounter requires an active role on the part of the teacher. It is at this point that the information on equivalence and nonequivalence will have to be utilized for designing a maximal encounter. That information should come from the philosophies of knowledge, human nature, and culture that the teacher has, as well as the ethnographic information on the history, language, and culture of the learner obtained in Step 1. Figure 4, Step 2 illustrates this procedure.

Step 2 of the procedural model involves three substeps:

Substep 2.1 requires the identification of the specific points of discontinuity or nonequivalence of the domain to the learner's cognitive map. It is this area that the teacher willl have to be concerned with the most. The knowledge to be transmitted (domain) needs to be recast into a form that will facilitate learning on the part of the learner. The recasting process needs to be linked to the ethnographic context of the learner. This linking of the domain to the personal-social context of the learner assures relevance to the learning task.

Substep 2.2 requires that the points of equivalence, i.e., the continuities between the domain and the relative portions of the learner's cognitive map be identified. We believe that this area already contains the linkages that will maximize the learning transaction and thus facilitate the desired outcomes.

Substep 2.3. How can the teacher redesign the encounter so that maximal learning can take place? There are several factors the teacher will have to utilize in order to accomplish this:

1. Agenda
2. General world view (values, attitudes, traditions, etc.)
3. Roles and role expectations
4. Setting
5. Linguistic symbols
6. Sex of the learner
7. Family style and roles of kin
8. Economic-social factors

The first four factors are the main components of the learner's cognitive map and are points that can be used to influence the success of the transaction. The remaining factors are interrelated to the first four, but they warrant specific consideration in the recasting of the domain to the encounter.

We must emphasize that the recasting of information for transaction must always keep in mind the personal-family and social-historical context of the learner's cognitive framework. Even when the learner's cognitive map shows points of discontinuity with the domain and the teacher's cognitive map, the teacher must facilitate and coordinate the interaction with the learner.

In the following section we will discuss and summarize the steps to follow in facilitating and coordinating the interactions with the learner, who through assessment has been found to be in nonequivalence with the domain objective. The points of discontinuity (nonequivalence) have been traced to the learner's and teacher's learning style and to specific cultural knowledge content revealed in the respective cognitive maps. The teacher in this situation must utilize different teaching strategies and his/her own experience to assure a successful transaction.

APPLICATION OF THEORY

The theoretical base of this paper has been presented in full in the two previous sections. An equally detailed presentation of the application of that theory in the form of classroom activities and teacher training strategies is not possible within the framework of this publication. A complete record of classroom procedures, training strategies, and field test results is, however, available in the manual *Anthropological Strategies for Multicultural Teacher-Learner Transactions**.

Table 1 is a brief outline that demonstrates the manner in which the theory was applied. It includes the following: areas in which assessment is needed, the instruments or skills to be utilized in the assessment, and outcomes that may be expected from the assessment. Schematically represented it would encompass all areas of the model—Step 1 identifying the extent and quality of equivalence between the teacher's and learner's cognitive maps, and Step 2 designing the encounter so that the desired outcome can be obtained.

Step 1 in the procedural model provides for comparisons between teacher and learner on several levels: teacher and learner cognitive map; teacher and learner cognitive style. The table outlines the skills and instruments utilized to identify cognitive maps and cognitive style, as well as outcomes to be expected. The purpose of such comparison is that the teacher may identify areas of equivalence, nonequivalence, or partial equivalence between her/himself and the learners. The emphasis in this stage is on collection of general background information about the learner.

Step 2 of the model includes a comparison between the teacher, learner, and the lesson to be taught. The significance of Step 2 lies in the identification of areas of continuity and discontinuity, between what is to be learned, and the background of the learner as identified by the skills and instruments outlined in Step 1 of Table 1. This comparison in Step 2 identifies learners' backgrounds that are continuous with the lesson and, therefore, in need of minor assistance, and those whose backgrounds are discontinuous and, therefore, in greater need of assistance. The movement from discontinuity to continuity is accomplished by "bridging." In bridging, the teacher utilizes experiences from the child's own background in relation to the lesson to be taught in order to close the gap between the learner's background and the lesson objective.

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TABLE 1

STEP 1 *Areas to be Assessed*	*Instruments/Skills Utilized*	*Expected Outcomes*
a. cognitive map (general) of teacher/learner	line drawings (general world view) culture scene transactions participant observation	maps may be (become): equivalent, nonequivalent, or partially equivalent
b. learning style for teacher/learner	embedded figure "word search" participant observation	styles: relational, analytical, or combination styles may be: equivalent, nonequivalent, or partially equivalent
c. culture systems for home/school (analyzed according to roles, rules, outcomes—allowing predictability)	home culture system checklist school culture system checklist participant observation	equivalent home and school systems/child functioning well: cognitive control equivalent home and school systems/child not functioning well: loss of cognitive control nonequivalent home and school systems/child functioning well: bicultural nonequivalent home and school sysems/child not functioning well: loss of cognitive control
STEP 2		
a. cognitive map (specific domain/lesson) for teacher/learner	content line drawings (related to lesson) general world view line drawings (portions related to lesson) participant observation	continuity (equivalence) with lesson to be taught: needs little "bridging" or assistance discontinuity (nonequivalence) with lesson to be taught: needs great assistance through "bridging"

Definitions of Areas and Instruments/Skills

General World View Line Drawings—A series of five specific "culture scene" line drawings related to the learner's daily experience and designed to obtain verbal responses regarding the naming and solving of common problems.

Content Line Drawings—A series of nineteen man-made and natural map feature symbols designed to measure learner's knowledge of lesson: "Maps give other data about the world."

Culture Scene—The knowledge learners need in school-classroom social situations when interacting with the teacher.

Participant Observation—An ethnographic technique used in discovering particular cultural knowledge about a learner's cognitive map regarding school situations.

Word Search/Embedded Figure Pictures—Words or pictures are hidden within a complex field or background. Learners are given thirty seconds to find and circle the hidden words or pictures. Cognitive styles may be determined initially by the child's technique for finding these words or pictures.

Home/School Culture System Checklist—A series of questions and possible responses to be completed in a checklist fashion. Questions are related to rules, roles, and outcomes for both systems, as well as the degree of predictability about those systems possible for the child.

The following is an example of the application of the theory to a social studies lesson. The lesson objective stated that people locate or construct man-made features in places that serve a purpose. That purpose is the satisfaction of needs and wants of man. The key concept in the lesson was functional relationships.

Information from Step 1 of the model, as outlined in Table 1, provided general background information about the learners. Information from Step 2 indicated the degree of continuity or discontinuity between that background and the lesson objective—functional relationships.

The following brief example demonstrates how information from a learner's background was used to bridge the gap when the learner's cognitive map was discontinuous with the lesson objective. We will use the information we obtained when working with a group of third grade bilingual learners. Ricardo will represent this group of learners.

The learning style necessary to successfully complete a lesson can be dictated by the structure of the lesson and by the materials used. By virtue of this, learners can be forced to switch to a weaker nonpreferred style, thus setting the stage for difficulty or failure from the onset. In this lesson, the material (a large floor map) and suggested lesson format were best suited to learners whose cognitive style was analytical. Ricardo's style, as assessed by instruments and procedures outlined in Table 1, was a relational cognitive style. As such, Ricardo may have viewed the map in a global fashion, possibly overlooking the smaller and more detailed part-to-part relationships necessary to understanding the intended lesson objective—functional relationships. Ricardo also may have been forced by lesson set and materials to switch to his nonpreferred, weaker cognitive style, setting the potential for difficulty, frustration, and possibly failure. Identification of cognitive style provided an awareness on the part of the teacher, which led to simple and minor adjustments in the introduction of the materials and lesson. Modification consisted of directing Ricardo's attention to those potentially difficult areas, both verbally and through gestures. Such slight modification in the course of the regular introduction helped avert difficulties dictated by the materials and format geared to a different cognitive style.

General information about Ricardo with respect to cognitive map and learning style was already available prior to the lesson through procedures and instruments outline in Step 1 of Table 1. Further information specific to the domain or lesson was available through utilization of procedures and instruments outlined in Step 2.

Content line drawings, specific to the lesson (see Step 2) indicated that Ricardo was not continuous with the objective of the lesson to be taught. However, further information about Ricardo's background, as revealed through general world view line drawings (see Step 1), indicated that portions of Ricardo's cognitive map were in fact highly continous with the lesson objective. Ricardo could not understand or demonstrate knowledge about functional relationships (lesson objective) in the abstract context demanded by the lesson format and materials. However, a practical understanding of functional relationships was demonstrated consistently through his responses to the general world view line drawings that depicted scenes that were directly linked to his experience set. All that was necessary was to bridge the gap from discontinuity to continuity by drawing upon those concrete experiences, and relating them to the abstract concepts of the lesson objective. During the course of the lesson Ricardo "failed" twice in the activity as set forth in the lesson format. It was only when Ricardo's background experiences, derived from all sources outlined in Table 1, were utilized that he was able to successfully complete the activity.

For several years there have been bilingual multicultural teacher training programs that have expounded on the utilization of the learner's background or culture as an aid to instruction. The question facing many teachers, however, has been how to identify, as well as utilize, that background or culture in the classroom. The theoretical model and classroom/teacher training strategies presented in this paper are an attempt to provide an organized and anthropologically sound methodology that can assist teachers in accomplishing this goal. In addition, the methodology goes one step further by changing the utilization of "culture" from a supplementary aid activity to the primary vehicle of instruction, thus becoming a dynamic process that evolves from the interactions occuring daily in the classroom. In this manner, the concept of culture becomes a working concept to be utilized in the learning process for improvement of the teacher-learner interaction and its outcomes.

NOTES

1. In this paper our conception of cognitive map is analogous to Spindler's concept of cognitive model.
2. Alchuler and Smith discuss and outline the rationale for the use of line drawings in their document, *How to Measure Freire's Stages of Conscientizacao: The C Code Manual*. They stress that the visuals have to be related to an individual's life experiences, i.e., specific to the cultural environment of the people the researcher is working with. In our research, we worked with a mixed ethnic group (Mexican American, Anglo, Asian) living in an urban-rural setting. The line drawings have been experimentally developed in collaboration with Francis W. Denning, Jr., professor of anthropology at the University

of Northern Colorado. Mr. Denning has drawn the initial set of line drawings. Information on their application is available in the teacher-training manual, *Anthropological Strategies for Multicultural Teacher-Learner Transactions*, Trujillo, Zachman, Mickey, May 1981.

3. Checklists are available in the teacher-training manual, *Anthropological Strategies for Multicultural Teacher-Learner Transactions*. The use of these checklists allows for comparison of the home and school culture systems in regard to roles, rules, and outcomes. This comparison allowed us to determine the predictability and functionality of the systems and the extent to which the learner used this information.
4. These two instruments have been used in the initial identification of the cognitive learning style of the learner. The materials are readily available in classrooms and the teacher can use them as a part of daily classroom learning activities. Samples of these instruments and their utilization are available in the teacher-training manual, *Anthropological Strategies for Multicultural Teacher-Learner Transactions*.
5. In the teacher-training manual, *Anthropological Strategies for Multicultural Teacher-Learner Transactions*, we have made use of two types of line drawings. One type of line drawing we used is the general world view-agenda line drawings discussed in Note 2 above. The second is referred to as a content line drawing. The content line drawings have been used to determine the learner's knowledge, specific to the lesson to be transacted. A copy of the lesson is available in the teacher-training manual; the lesson objectives are the following:
   A. Man-made features can be shown on a map.
   B. "Almost all man-made features are located in a particular place to serve a purpose, and that *purpose* is to supply the *needs* and *wants* of man."
   C. Children will recognize the attitude implied in Objective B as only one among differing viewpoints—all of which are valid and culturally rooted perspectives.

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ED212136

PRINCIPLES OF DESIGN FOR FUNCTIONAL BILINGUAL EDUCATION PROGRAMS

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Any chosen design for instructional programs must reflect open communication among the parties involved; the goals and objectives need to be clearly delineated and understood by all. In the case of bilingual education, there has been a tendency towards tunnel-like vision both internally and externally giving rise to general misconceptions, hostility from the wider community, and misinterpreted Balkanization of the multiplicity of ethnic groups. Erringly, the wider community views minorities as clinging to bilingual education as a means to foster volatile, antagonistic, narrow ethnic groups, hostile to the broad aspirations of American culture.

Recently, the *New York Times* printed an article that commented on growing numbers of Hispanic people. For the first time, Hispanics will outnumber blacks and their numbers are growing so fast that by 1984 there will be twice as many Hispanics in many larger urban cities (*New York Times*, 1980).

Yet Otheguy and Otto (1981) note that bilingual programs have brought about a welcome change in the attitudes of many educational institutions toward the home language and culture—from opposition or indifference to celebration and affirmation. Bilingual education in the United States is founded largely on the premise that linguistic and cultural differences as such, and particularly a lack of proficiency in English, are a primary reason for the low academic achievement of students who are from a limited-English background. Bilingual education programs have been implemented to teach those students in the language they understand better and with adequate cultural instructional materials. However, there is a lack of adequately trained special education support personnel, sensitive to linguistic as well as cultural differences and able to speak the dominant language of the students they are serving (*Education Digest, 1980*).

> For the first time in many cases in the U.S. school has been opened to minority language group parents, allowing them not only more opportunity to communicate with school personnel, but also to participate more actively in their children's education by acting as resources in the instructional processes, materials development, as decision makers in program planning and as teachers' assistants in the instructional process. Moreover, bilingual education has provided socially prestigious jobs in education to people of the community because they speak a minority language. As opportunities for professional training and positions in educational decision-making multiply more language minority

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> people will have access to the middle class—a factor which has the potential to increase national solidarity (Center for Applied Linguistics, p. 45, 1978).

While the above does enumerate certain benefits to minority groups, these are both limited and limiting: limited in that minority-language populations should view education only as a small part of the whole economic picture; limiting in that this view does not prepare the bilingual community to function in the wider community, in the job market. Although positions are needed to fill educational slots, the greater number of minorities will be untrained for positions requiring mastery of the English idiom. Minorities must be encouraged to enter fields such as law, engineering, politics, and medicine as well. Even positions such as secretary require a good mastery of the English language. Certainly the knowledge of a second language will enhance a candidate's qualifications. At present, minority representation is minimal, partially because of the lack of exposure to possibilities in these fields. To view bilingual education in terms of ethnicity results in grave dangers, in the view that the aim of the program is to Balkanize different ethnic groups (Epstein, 1978).

The following represents a view of one Hispanic, uninformed of the principles and goals of bilingual education, arising, perhaps from misconceptions portrayed through the media, or perhaps failure of programs to attain positive visibility. It can be very damaging for a member of the minority to come out and voice criticism for bilingual education due to misperceived advocacy of Balkanization:

> Memoir of a Bilingual Childhood
>
> . . . those middle-class ethnics who scorn assimilation seem to me filled with decadent self-pity, obsessed by the burden of public life. Dangerously, they romanticize public separateness and trivialize the dilemma of those who are truly socially disadvantaged (Ricardo Rodriguez, p. 34).

Here is the case of a Chicano who never benefitted from a bilingual program and, because he was "successful" now assumes that the same would be true for all Hispanic Americans. Hidden in his argument is the fact that he was a product of the middle class, reared in an Anglo community; he notes that "they were the only Spanish-speaking family on the street." He, therefore, had to master different cultural linguistic norms in order to survive. It is unfortunate that articles such as this appear. His views are contrary to today's reality, where a large number of minority populations live in ghettoes, where the minority language and culture are fostered, leading to separation from the wider community into which internalization of norms are necessary for survival and prosperity.

A functional design will collapse if any one element in the system collapses. The exclusion of any one element, learner, school, media, government, or resources makes an organic or functional model incomplete and thereby dysfunctional.

I have chosen a functional versus dysfunctional dichotomy to stress that:

1. The program will have deleterious effects where agents, and teachers, both monolingual and/or bilingual, are uninformed as to the specific guidelines outlined in their particular project.
2. Children sense conflict between monolingual/bilingual sectors, or in-

ternal conflict due to programmatic, methodological issues.
3. Articulation leads to greater "functioning," whereas the reverse leads to dysfunction.

The functioning of the various subsystems is an essential process designed to promote the success of the organizational structure. "Functional" as defined by Hanson (1979) is,

> the quality of the state of collaboration that exists among departments that are required to achieve unity of effort by the demands of the environment (p. 168).

The achievement of this state in bilingual higher education is necessary to provide quality education at all levels of the system. Hanson adds that "The term not only refers to interdepartmental relationships but also to the process used to establish those relationships." Presently, as discussed later in this report, recommendations are being proposed to deal with the lack of management in bilingual postsecondary education.

In an educational organization with a turbulent environment, it is also important for the various dimensions of "differentiation" to exist in order for the organization to meet the needs of a changing environment.

"Differentiation," as defined by Lawrence and Lorsch (1979), is "the difference in cognitive and emotional orientation among managers in different functional departments." According to this theory the subunits of an organization have different rules and methods of operation, varying degrees of concern for people, and different schedules and goals.

Dysfunction can occur at any level; where parents are intimidated by teachers, where the teacher refuses to confer with the administrator, where the administrator has little knowledge of the program, where the university is not effectively utilized, or where advice is rejected through lack of consultation at the local, state or federal levels. Each element is a vital link in an integrated whole, or in what might be called a "functional design."

Collapse frequently occurs as the result of ignorance of accessible channels of support, as the result of perceiving one element as an unimportant link in the system, or where parents, teachers, principals, and community, whether local, or at large, have little notion of the "*gestalt*" or a sense of "integratedness"; namely the questions of identification: where am I, where do I fit, where am I going, and what is my role. Although the program's director may have proper knowledge and attend the necessary seminars and training programs, problems arise when this knowledge is kept secret, causing first of all misconceptions, then alienation and hostility, and finally rejection. In true integration of conflicting viewpoints, the best aspects of both parties' points of view are incorporated into the resolution. Both parties benefit in a true integrated approach, because neither party has to give up anything it does not want to (Follett, 1940).

Costs of Bilingual Education

Proponents of bilingual education argue that costs, other than starting costs, are minimal because a bilingual program that is an integral part of the educational services would in theory require no additional teachers or facilities and that start-up costs, which are more expensive, would lie primarily in materials acquisition. Such arguments are frequently rejected by people dealing with the problems associated with bringing a bilingual program into a school system, since most of these are "added on" as a separate program to the regular educational services rather than being integrated into them (Teitelbaum and Hiller, 1978). The Cardenas study (1979) determined that there were five major concentrations of expenditures for bilingual programs: staff, materials, library resources, equipment and testing. In this particular study, costs varied as to year of program implementation and grade level, with the high costs being concentrated in lower grade levels in the first year of implementation and the lower costs being concentrated in the fourth year of program implementation in the upper elementary grades.

Little or no information is available on the costs of different types of bilingual programs, e.g., transitional versus maintenance, alternate-day language use versus gradual introduction of English, Chinese bilingual programs versus Spanish, etc., Title VII funded programs versus state funded programs, the cost effectiveness for different types of programs or on relative costs of bilingual education in various states.

State funding varies for bilingual programs; in states where only a few cities have LES/NES populations, no particular state funding is available (Cardenas, 1979). Funding has been based on political feasibility, and on available and realistic analysis of program costs. If there is a large gap between state appropriations and additional costs of a bilingual program, districts must look for outside sources of funding. Federal programs, varying widely in their regulations, are perhaps the most looked-to sources, in particular Title VII ESEA, to provide funds that might be utilized to implement a bilingual program.

Washington's commitment to capacity building indicates that federal support is not committed to indefinite funding for LEA's (local educational agencies) or SEA's (state educational agencies). It is clear that state and local districts will need to institutionalize bilingual programs. To meet this inevitable reality, LEA's must seek philosophical support from sources external to the bilingual program by proving that bilingual programs are of high calibre. Society must be made aware of the options that bilingual programs provide for the integration of all groups.

A striking weakness in bilingual education has been in the area of evaluation. Perez and Troike (1979) cited the following needs: (1) research to determine the most relevant and important variables to be measured (which could require entirely new approaches to measuring), (2) evaluation procedures that provide meaningful feedback to the teacher and program planner, (3) trained evaluators, (4) agreement on standard types of data to be collected, (5) input of parents and other community members in the planning and application of an evaluation design, language assessment of students, and curriculum materials development, (6) the development of positive public attitudes towards bilingualism, rather than viewing bilingualism as elitist, making it more socially attractive, thus reinforcing the motivation for learning other languages in bilingual education.

To emphasize bilingual competence in federal hiring, colleges and universities should be encouraged to provide incentives for the graduates of bilingual programs who achieve a level of competence rarely realized by language majors in four years of undergraduate study. In general, competence in an area will be sought to the extent that it is socially valued and regarded. If the present reward structure in our society, with its underlying xenophobic character can be changed, then what is different will no longer be a source of threat or alienation but rather advanced bilingual competence, which can become the mark of an educated person as it has been in many other countries. Then it will prove to be an economically valuable asset as well.

As mentioned above, other areas needing further research and development are evaluation and program implementation. These are often hampered and limited by a scarcity of adequate assessment and by gaps in research. Thus, appropriate instruments must be developed to provide the most accurate evaluation of the progress of children in bilingual and bicultural programs. To ensure the greatest possible precision in implementing programs, research is needed in such areas as first and second language acquisition, the relationship between language and thought, and the learning styles of children from different cultural backgrounds (U.S. Commission on Civil Rights, 1975).

Otheguy and Otto pose a moot question: can we be content with static maintenance, one which does not further language development? The authors contrast static maintenance with developmental maintenance in which language skills are developed "with as much diligence as they are developed in English." They challenge the reader as to whether static maintenance of anything is a viable enterprise. Again, bilingual programs will succeed only by going beyond bilingual sectors and wooing the wider community.

Critical Elements of Program Design

Questions cannot arise as to the need for support systems for the bilingual child enrolled in a bilingual program, since compliance requirements are specified in detail in all rules and regulations emanating from both the state and federal levels, as well as the professional teacher training literature. However, this paper suggests that unless the child is helped to become a part of the milieu in which he must live, he will develop frustrations and feelings of inferiority. Moreover, it is insufficient to equip the child with a sense of "being proud of being part of a specific ethnic group." More important is the ability to cope with and succeed in the broader society in which the child will be required to perform. Teachers, then, first bilingual, and then monolingual, must provide the linkage so that the child may effectively function and compete in the American society. At the center is the child to whom educators are primarily responsible. Outside support systems must also be consulted. These include local boards of education, resource centers, educational improvement centers, and social/civic organizations. Other educational specialists may be called upon to help alleviate and solve the pressing problems of the bilingual child. Experts such as sociolinguists, psycholinguists, transactionists, cognitivists, and nutritionists are invaluable sources of aid. Not only must the program consider child, school, Anglo-administrators, district superintendents, political entities, congressmen, and most of all the Anglo public in general, but also accessible facilities that include museums, theaters, libraries, and commercial enterprises.

I suggest, then, that in the initial planning stages, the programs outline strategies for (1) engaging monolingual sectors; (2) interacting closely with monolingual sectors; (3) following a prescribed process similar to the "thorough and efficient" mandate in the state of New Jersey that attempts to engage the entire comunity, irrespective of race, language or origin, in making educational activities responsible and viable.

The following are strategies for assisting monolingual sectors to accept the minority culture:

1. Become informed about the student's culture and reflect it in some way in the classroom.
2. Focus on the strengths of the bilingual child.
3. Prepare the child to work with monolingual groups;
4. Consult possible support services: Boards of Education (local/state/federal); International Rescue Committee, Puerto Rican Congress, Aspira, Consulates.
5. Non-verbal communication is culture specific. Norms for the Anglo-American differ significantly from other cultures.
6. Prepare the child to work independently by guiding, not leading, the child to a new level or learning.
7. As the teacher has a specific teaching style, so too, the child has a preferred learning style.
8. Use neighborhood resources, and make the classroom a living resource.
9. Take the children on a walk around the school and neighborhood.
10. Be sensitive to the child's feeling of alientation that may result in his withdrawal. Identify this behavior early.
11. Discuss any concerns with school administrators, who will serve as an asset, not a threat. Seek support and cooperation.
12. Identify local, state, and federal commercial and cultural sources of information.
13. Invite parents to visit and observe a class.
14. Remember that limited-language proficiency is not an indicator of inferiority.
15. Use parents as a resource.
16. Seek an intermediary who can function as translator/interpreter for you.
17. Be positive when meeting with parents. Learn key expressions in the parent's language.
18. The child is the client and as client, he/she should be our center of concern.
19. If you are fortunate enough to have a bilingual program in your school, meet with the school bilingual coordinator and seek advice.
20. The linguistic community in which the child lives affects his attitudes towards learning a new language.
21. The domain of language behavior (home vs. school, teacher vs. peer, formal vs. informal) affects the language development of the child.
22. Adapt assignments to fit the needs of bilingual students.
23. Do not rely on media for objective information.
24. Understand the dynamics of bilingual education instead of viewing programs at a distance.
25. The monolingual teacher represents the link between the bilingual class setting and the mainstream society.

Wider Community

Monolingual teachers need to understand the dynamics of bilingual education and not just view these programs at a distance without a knowledge of the goals and principles of bilingual education, since this only results in misconceptions and hostilities, and at worst, encourages a view of bilingual education as a possible threat to their own positions in the system.

Monolingual teachers can be instrumental in bridging the gap with bilingual children who are no longer in bilingual programs by enlisting the support of both parents and teachers. Bilingual teachers are the link for the minority child about to enter the larger society and are the vehicle for preparing the child to function in that society. Providing a knowledge of alternative cognitive styles, the teacher can prepare the child to function in a new learning style, thus helping the child to become integrated, not assimilated, into American society.

The monolingual teacher can invite representatives from the community to speak about their achievements and the benefits of knowing and mastering a second language. Our pluralistic society demands this of us, particularly from the teacher who will unconsciously communicate values and attitudes. Teachers must foster universalism, not provincialism. Instead of proclaiming "I am proud to be Dominican," (or whatever other ethnic group) the affirmation should be "I am proud of commanding two languages, two cultures, and having a greater understanding of peoples outside of the United States."

Teachers need to see how bilingual education is functioning in their particular setting since the variables are such that one simply cannot make broad generalizations and freely apply them to all situations. The bilingual program should be made instrumental in developing appreciation for the cultural heritage of both the bilingual child and other children in American society further ensuring that the monolingual sector will also experience this enrichment process as a contribution to American society.

Functional Designs

Alternative plans need to be introduced to teachers, both bilingual and monolingual, subject representatives, and administrators. Elements external to the program are equally as important if not more important because it is the acceptance of bilingual education from the wider community (monolingual sector) that eventually will determine whether programs will become institutionalized rather than contingent upon federal funding.

James Banks (1977) offers a model for a total school environment that reflects ethnic pluralism (see Figure I).

Though a good model, it is insufficient to the needs of a functional programmatic design for bilingual education. The model is too general. For example, it does not identify the elements of the "hidden" curriculum. It starts and ends with the formal school setting. It is not child-centered, nor does it provide a definite strategy for interacting with the wider community.

The desigh shown in Figure II, proposed by the federal government, is also insufficient for the needs of a particular community-interest bilingual program.

FIGURE I

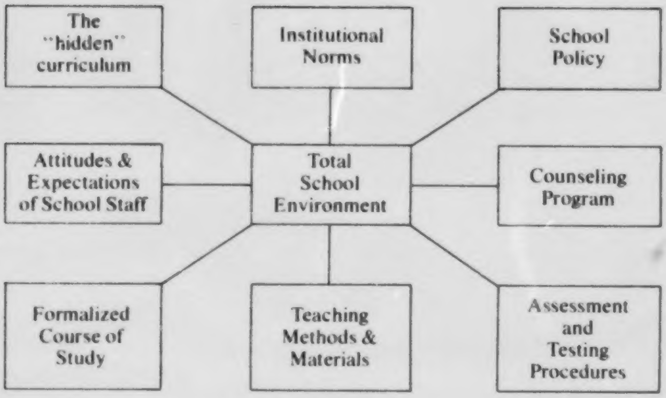

The "hidden" curriculum
Institutional Norms
School Policy
Attitudes & Expectations of School Staff
Total School Environment
Counseling Program
Formalized Course of Study
Teaching Methods & Materials
Assessment and Testing Procedures

FIGURE II

EFFECTS OF SELECTED VARIABLES
ON
PROGRAM EFFECTIVENESS

LANGUAGE ACQUISITION/USE QUESTIONS	STUDENT CHARACTERISTICS QUESTIONS	CURRICULUM DESIGN QUESTIONS	TEACHER CHARACTERISTIC QUESTIONS
AREAS	AREAS	AREAS	AREAS
-Relationship of L_1 to L_2	-Age	-Gradual Transition	-Attitudes
-Use of L_1 as medium of instruction	-SES	-Abrupt Transition	-Proficiency in L_1/L_2
	-Proficiency in L_1/L_2	-Classroom mix of LEP & non-LEP students	-Training related to bil. ed.
-Method for Introducing L_2	-Language dominance	-Amount of time given to L_1 and L_2	-Teaching competency
-Status of L_1 to L_2	-Achievement level		
-Characteristics of L_1 in home/community (literacy)	-Grade in school	-Administration/support system	-Teaching style
-L_1, L_2 proficiency	-Attitudes toward program/school		
	-Learning style		

A shortcoming of school programs has been failure to plan for children existing from bilingual programs. To date, substantive follow-up information on children previously enrolled in bilingual programs is still lacking. Though longitudinal studies have become a priority, the data is not yet readily accessible. Programs need to prove to the general public that a decrease in attrition can be correlated to the students participation in a bilingual program. At the same time evidence must show that students were better prepared to interact in American society. For instance, how many students went to jail versus how many students became successful career people? How many students finished a high school education versus how many dropped out?

Children need to be guided from a state of dependency to a state of independence. Charles A. Curran (1977) describes a counseling-learning approach, a whole person model, that would serve well bilingual educators. Applied to bilingual education, it suggests that educators must provide supportive settings to allow the student to "depend" upon the teacher, but the teacher must encourage the student to make attempts to speak the second language. Not only should the encouragements be to speak the second language, they should also be to interact in that language. The client/student needs to be urged to steps denoting greater confidence, independence, and proportionate insight into the relationship of phrases, grammar, and ideas. The teacher takes children from stages of total reliance to a stage in which independence and free communication are established.

Teachers need to break the student/teacher dependency or else face the risk of the children feeling lost and inadequate once they leave a bilingual setting. Without having broken the dependency cycle, the child will experience conflict towards both cultures; whereas, if the client can effectively function in L_1 and L_2, both cognitively as well as affectively, then he will be competing on an equal footing in American society.

While in the bilingual program, the student feels protected by intensely sharing a feeling of belonging, of need.

> If the main motivation for learning is the need of the knower (teacher) and the learner (student) to develop, and if one of the main threats to learning is non-belonging, then an essential first condition of learning is that a sense of belonging emerge for both in that very separation (Curran, p. 248, 1977).

Figure III shows that each bilingual program needs to "map out" a model identifying the available resources in proximity to the project, and at the same time have either an overlay or second model that considers the part (specific project) to the whole (state and federal level). For example, School No. 1 would differ from School No. 2 since the surrounding facilities, budget constraints, L_1 and L_2 might differ. Media access, likewise, would be graphically specific, depending upon locale. In such a model, the child remains central. Available to the project are resources specific and general to that program.

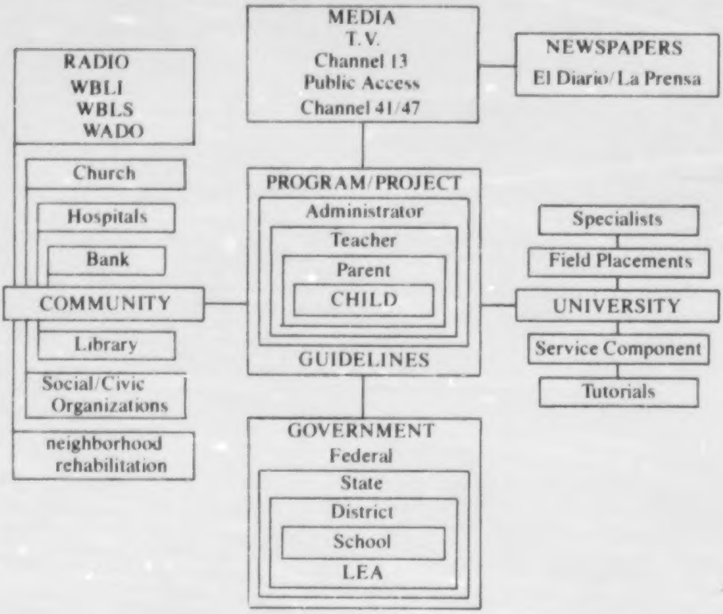
ELEMENTS INCLUDED IN A SUCCESSFUL MODEL

Child:

The child must gain from the program the facility of functioning in different environments, particularly the mainstream environment, U.S. society, so that he can compete on an equal footing with his peers. Initially, the bilingual child comes into an environment that is totally supportive, the

FIGURE III

AN ORGANIC CHART APPLICABLE TO NEW YORK THAT, WHEN MODIFIED ACCORDINGLY, COULD APPLY NATIONALLY


MEDIA
T.V.
Channel 13
Public Access
Channel 41/47
NEWSPAPERS
El Diario/La Prensa
RADIO
WBLI
WBLS
WADO
Church
Hospitals
Bank
COMMUNITY
Library
Social/Civic Organizations
neighborhood rehabilitation
PROGRAM/PROJECT
Administrator
Teacher
Parent
CHILD
GUIDELINES
Specialists
Field Placements
UNIVERSITY
Service Component
Tutorials
GOVERNMENT
Federal
State
District
School
LEA

bilingual program. His rights and purpose are to see alternatives that will prepare him to function in a new learning environment, the wider community. He then becomes integrated into the environment, not assimilated, not losing his identity. As an integrated entity, he will function at his highest capacity of productivity, equipped with two cultures and two languages, a success goal, instead of a deterrent goal that otherwise would attempt to eliminate the native language and culture, and would result in inner and outer conflict. Psychotherapists remind us that blotting out a part of the individual, that is the memory of his origins, results in psychological trauma (Robbins, 1978).

Teacher:

At times, educators not directly involved in bilingual education are peripherally aware of the issues, and this unfortunately results in misconceptions. The media generally focuses on negative issues; its major concern is to generate sales, and often, to seek sensationalism. The monolingual teacher must realize that s/he need not be proficient in the language of the child. Minimally, the monolingual teacher can be of assistance to the bilingual child by enlisting the support of resource centers and other available resources, particularly the bilingual teacher, who can be the greatest advocate, while interacting with monolingual teachers. To do this, bilingual personnel must be informed and willing to gain support, both intellectual and emotional. S/he should be informed in terms of the program's past and projected future and should have access to the proposal.

The teacher should be equipped with working techniques that encompass psychological principles. A teacher should be an expert in the technology of learning, but as is true of other technologists, s/he must continually appraise techniques in terms of new discoveries in research. It is literally true that many of today's principles may be outmoded or changed in a few years. It is thus imperative that teachers maintain an open-mindedness that allows review of their teaching methods as new discoveries are made.

Parents:

Parents are called upon to sign proposals since they represent LEP children. By actively participating, a stipulation identified as a priority in the 1980 rules and regulations for Title VII, parents should be helped to formulate the instructional goals of the program. They need to be encouraged to attend and participate in meetings when called upon to do so. The present author had the opportunity of seeing how the above was accomplished in a *favela* (slum) community in Sao Paulo, Brasil. Parents were given identification cards with their pictures and were *required* to attend meetings at least four times per year. Attendance was systematically taken. This was a municipal public school and not a private setting. The method was effective with an 85 percent success rate of parent participation.

Administrators:

Token participation by Anglo administrators results in dysfunctional programs because the administrator works in a vacuum. He may perhaps sign the proposal, and receive funds but he may not be ensuring an integrative environment for the program. By such ineffectual leadership, therefore, he forfeits his right to being the administrator. The program should not remain an unknown or simply a means to mainstreaming, since the purpose of the program is not to mainstream but to integrate both groups.

The administrator of a bilingual program must grapple with several unique managerial problems. First, although most bilingual programs are run under the aegis of an existing school system department, functionally they tend to become separate entities. Second, most educational programs involve a series of instructional activities that may or may not be supported by additional services, e.g., counseling. Many of these educational functions are ordinarily handled by non-institutional departments.

Supervisors of Programs:

Demystification would help in eliminating the element of threat to teachers, administrators, and directors of programs. Remarks about having "put on a show for outside evaluators" do not help but rather hinder the well-being of the program. Proper identification of areas to be evaluated will result in more effective, efficient programs and evaluations. So many times, the purpose of the evaluation, and areas to be evaluated, are unknown.

Conclusions:

Bilingual sectors need to seek modes of enhancing articulation and conflict resolution with the wider community, even at the risk of initial rejection and hostility due to lack of information, or misinformation pertaining to the underlying principles and goals of bilingual programs. No longer can bilingual programs afford to work in isolation; they need to work in cooperative endeavors with the wider communities so that when funding runs out, the programs will not be phased out, since the children and their needs will not simply disappear.

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ED212137

THE SHORT CIRCUIT MODEL OF READING

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The reading process has been examined by a number of theorists (Goodman, 1976; Gough, 1972; Holmes, 1976; LaBerge and Samuels, 1976; Mackworth, 1971; Mathewson, 1976; Ruddell, 1976, Rumelhart, 1977). These theorists each describe the reading process from a slightly different perspective and in so doing, tend to ignore important aspects of the reading process that others have described. In this paper, I would like to introduce and discuss six different factors that I believe all reading theorists consider to be important to the reading process, relate these factors to the problems a bilingual child might have as s/he meets the printed page, and discuss the interrelationship between factors as it affects the bilingual child. The Short Circuit Model, which is presented at the end of this paper, is an attempt to consolidate these six different factors into one model of reading capable of explaining the diverse reading processing that occurs both between and within individuals of any linguistic group.

Six Short Circuiting Reading Factors

The name "short circuit" has been given to this model because, in many ways, it adequately describes what happens bioelectrically in the brain. When any information is lacking or is different from that which the reading task requires with regard to any of the six short circuiting factors, a "blackout" occurs that makes the individual aware s/he has met something new to his/her cognitive system. The severity of the short circuit will depend on two things: the importance of the information to a particular reading task and the importance a particular individual gives to the information s/he is lacking. This therefore means that all of the factors will not necessarily have the same short circuiting potential; the effect of each of the factors on the reading process will depend greatly upon the individual and his specific interaction with the printed page. The six short circuiting factors include the following: linguistic factors, sociocultural factors, attitudinal and motivational factors, neurological factors, perceptual factors, and cognitive factors.

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Linguistic Factors

How important is the knowledge of a language to the reading process? What is "knowledge of a language"? Is it the knowledge of words, or the knowledge of syntax, or the knowledge of logic between ideas, or the knowledge of semantics? Does it include knowledge of a specific dialect or can the knowledge of a specific dialect interfere with the reading process when it does not coincide with a specific author's syntactic "style"? In the case of a second language reader or bilingual child, does that individual have any language skills that will help him/her meet the printed page or is s/he "starting from scratch"?

In this discussion, linguistic factors will include the linguistic processing done by the child from the ability to discriminate between letters and words, to the ability to correspond sounds with these letters and words, to the ability to understand the words and syntax used in the passage, to the ability to understand the meaning of the whole. All are important linguistic factors. Because the acquisition of the ability to discriminate and attach meaning to letters on the printed page is similar across children, I would like to discuss the effect of learning to read an unfamiliar language on the bilingual child.

Because reading involves the use of a language to convey thoughts across time, to read and comprehend well demands that an individual have an extensive store of linguistic labels for different aspects of his environment and also understand how those labels can be placed in relation to one another. If the word used on the printed page does not correspond to the label a reader has for the specific thing being discussed, or one has no knowledge of or linguistic label for that which is being discussed, then the reading process will be short circuited. The application of this possible short circuiting factor to the bilingual child, who perhaps has other linguistic labels for his environment than those used on the printed page, is obvious. If the words being used on the printed page cannot be attached to something that has meaning for the child, then these words will remain incomprehensible for that child. If the child has mastered the phonic relationships between sound and symbol, mouthing of words may occur when the child is asked to read aloud, but no comprehension will take place during this "reading" process because the child can attach no meaning to the sounds.

Syntax is another possible short circuiting factor. Many studies have been done examing the child's understanding of different syntactical structures of their *native* language (H. D. Brown, 1970; Slobin, 1966a,b; Thorndike, 1971; Bormouth, Carr, Manning & Pearson, 1970), and all have discovered that children from preschool to at least fourth grade have difficulty in "weighting" semantic elements as signaled by different syntactical arrangements. Children in their acquisition and understanding of language seem to first develop an understanding of the very basic clause structures used by a language (i.e., S-V, S-V-O, S-V-C, etc.) and only later develop an awareness of and understanding of the more difficult sentence patterns (Miller, 1979; Brown, 1973; Slobin, 1966a,b; McNeill, 1970).

For example, consider the following:

Example 1: The child is running. She is in the woods. The bear is chasing her. He is hungry. The girl is scared. She wants to get to her grandmother's house.

Example 2: The scared child is running through the woods away from the hungry bear, hoping to arrive soon at her grandmother's house.

In the first example, the syntactic relationship between words is made explicit; each subject and its accompanying verb are presented together. In the second example, there is a great deal of information that is not stated explicitly by the author. Since the child is running away from the bear, it is presumed that the reader already knows that the bear is chasing her. Also notice the subtle way that the reader is supposed to discover that the scared child is, in fact, a girl: "hoping to arrive soon at *her* Grandmother's house." Also important in the second example is the fact that whereas in the first example the positioning of subject and verb together meant that they were related to one another, this is not necessarily true in the second example. Is the bear hoping to arrive at the Grandmother's house, or is the child? With the increasing difficulty in syntactic complexity comes an increasingly difficult presentation of meaning with which a child, especially a bilingual child who has had limited exposure to a language, will have difficulty.

Syntax also seems to be used as a semantic "chunking" mechanism. In the first example, the reader is presented with six different "bits" of information, each bit being equal in importance to the one that precedes it. In the second example, the reader is presented with one main bit of information, "the child is running," and all other information is made subordinate to it. Obviously the second example leads to a method through which humans can cognitively conserve computing energy because there is only one main idea to remember, but it also presumes that the reader can efficiently and effectively extract that meaning from the syntactical means of presenting it. If children whose native language is English have difficulty extracting this information, why should it not also affect the reading process of children from homes where the language and/or syntax used does not correspond to that used by the author in the text?

As has been demonstrated above, linguistic factors can have a great deal of effect on what is understood by the bilingual child; however, language, although it is the most obvious short circuiting factor when beginning to understand the reading process of the bilingual child, is only the first factor to consider.

Sociocultural Factors

Sociocultural factors, when applied to the reading process, include the presuppositions that both the author and the child have learned from their sociocultural group and bring with them to the printed page regarding traditions, religious and political institutions, religion, man's relationship to man, and even man's relationship to the universe and a supernatural being. All children, as well as all adults, from all sociocultural groups come to the reading situation with such presuppositions that have been acquired from interaction with family and friends. Streiff (1978), who is interested in the effect of sociocultural presuppositions in the reading process, has conducted a research study that suggests the importance of these factors on reading, particularly for the bilingual child or the socioculturally "different" child. After completing her study of the reading done by different groups of Alaskan children, Streiff (1978) makes the following statement:

> The studies which investigated reading materials which were generated by children might indicate that more than dialect differences are at work in slowing the reading progress of children who are socially and linguistically different from children of the mainstream of American

> life. Such materials would reflect not only phonological, syntactic, and semantic similarities to child oral language, but would also incorporate a child's view of the world, if rendered accurately by those who recorded the stories. (p. 47-48)

Other studies done with older subjects also suggest the existence of sociocultural factors that can distort the meaning intended by the author when read by an individual with different sociocultural presuppositions than that of the author. Gatbonton and Tucker (1971) examined the processing of American literature by second language learners of English and found that a second language reader seems to process information from the printed page through a cultural filter that can affect the understanding or appreciation of the literature being read. Another study done by Steffensen, Joag-Dev, and Anderson (1979) examined the cultural filtering that appears to occur as a reader reads a story with cultural presuppositions that are unfamiliar to him. They studied the responses of Indians and Americans to the reading of an American-based and an Indian-based cultural event and found that subjects read their native culture-oriented passage more rapidly and recalled a larger amount of information from it; in contrast, subjects responding to the foreign passage produced more culturally-based distortions of the meaning intended. It appears then, that the greater the lack of congruence of sociocultural assumptions between the author and the reader, the greater will be the lack of congruence between the message intended by the author and the message received by the reader. Sociocultural factors are one of the most important factors in short circuiting the *meaning* obtained by a reader from the printed page.

However, sociocultural factors can influence the reading process in another way. Bernstein (1965) suggests that sociocultural factors have a very definite impact on the language the child develops. After studying not bilingual children but children from different socioeconomic groups in England, he discovered that the language and syntax used between the two different groups varied greatly. His final conclusion was that "the form of social relation or—more generally—the social structure, generates distinct linguistic forms or codes and *these codes essentially transmit the culture and so constrain behaviour*" (author's italics) (p. 149). Halliday (1978) also suggests a similar relationship between language and one's sociocultural group:

> Language is the main channel through which the patterns of living are transmitted to him [the child], through which he learns to act as a member of a 'society'—in and through the various social groups, the family, the neighbourhood, and so on—and to adopt its 'culture,' its modes of thought and action, its beliefs and its values. (p. 9)

Therefore, sociocultural factors can influence the reading processing done by a bilingual child not only by affecting the meaning s/he receives from a passage, but also by affecting the language s/he is capable of understanding. In the case of a bilingual child, the effect of the sociolinguistic short circuiting may appear to be different from the effect of a "normal" child who meets a topic on the printed page which is out of the realm of his experience or whose language does not coincide with that used by the author of the text; but, in effect, the two "different" types of readers are only two different examples from a continuum of examples of the possible sociocultural/linguistic short circuiting which can occur in the reading process.

Attitudinal and Motivational Factors

Attitudinal and motivational factors also play an important role in the reading process. Athey (1970) suggests that it is affective factors that propel the working perceptual and cognitive system into action and sustain it through the duration of the task. Mathewson (1976), in his description of the reading process, describes what some of those affective factors are; for Mathewson, the motivational factors include curiosity, achievement, activity, and, I would like to add to his list, the need for literacy. In turn, the motivational factors are influenced by the attitude the reader has towards what s/he is reading; attitudinal factors involve the interaction of prior values, attitudes and beliefs the reader has with the meaning derived from the input from the text. If the individual feels acceptance towards the processing that is occurring as s/he meets the printed page and thus feels motivated enough to continue his interaction with the print, s/he will continue; if not, the process is discontinued. The task of reading is therefore greatly influenced by the motivation one holds for that task of reading; and this motivation, in turn, is greatly influenced by the attitude one holds about the reading materials and reading itself.

Attitudinal and motivational factors are affected not only by each other but also by both linguistic and sociocultural factors. As discussed above, sociocultural factors work as a sort of filter through which messages are screened. If a message is felt to be of importance to the sociocultural group, then the message will probably also be of importance to the child from that sociocultural group and will be given the appropriate attention; if not, the message will be minimally attended to or it will be lost. Sociocultural factors must be considered to have a very strong influence on attitude and motivation.

The effect of sociocultural factors on language has been mentioned previously; however, the interaction between sociocultural factors and linguistic factors also affects motivational and attitudinal factors. If the reader can not comprehend the language being used or if his linguistic interaction with the world does not include an understanding of the topic being discussed, then these will influence the attitude and motivation the reader feels towards the task of reading.

Attitudinal and motivational factors play an important role in determining not only whether the reading process does occur, but also what information the reader perceives and understands from what he reads. In this respect, the bilingual reader is no different from the "normal" reader.

Neurological Factors

There are two important issues that need to be emphasized in this discussion of the effect of neurological factors on the reading process. First, as will be discussed under perceptual factors, neurological "mis-wiring" can affect the reading process simply by affecting what is perceived by the eye as it looks at print; if the neurons are functioning improperly, this will greatly interfere with the visual processing involved in the reading process. Secondly, the brain, or neuronal network, is the medium through which all information from the environment is processed; the information either learned or carried genetically by it will influence and color what is cognitively perceived and processed through it. Both the pre-wired and learned cultural and cognitive factors that are part of the neuronal network influence a number of aspects of the reading process:

1. They will influence the message that is received from print by the reader by forcing the reader to attend to those bits of information that he understands and holds an interest in learning.
2. They will affect the attitude and motivation a reader will have towards the content of a specific message.
3. And they will also affect the expectations a person holds about what he will meet on the printed page. As will be discussed later, expectations play a major role in determining what we perceive or understand.

However it is important to remember about this inherited and learned information that is attached to the neurological network that this information includes both *language* and *alinguistic experiences*. The bilingual child may come to the reading situation without the appropriate language, but s/he does *not* come without a variety of alinguistic experiences that can be used to help him/her acquire the language. This is one of the most important things to remember when choosing appropriate reading materials for the bilingual child.

These neurological factors are also closely related to the other reading factors. Language is that which is learned by the neuronal network to socially transmit ideas and perceptions contained in the neuronal network. The ideas and perceptions contained in the neuronal network will be to a great extent determined by or influenced by one's sociocultural group. And the combination of language, ideas and perceptions and inherited cognitive information will interact to form one's attitude towards specific reading materials and the motivation one feels in carrying out the specific task with which s/he is confronted. Neurological factors play a particularly important role in the reading process because they are the medium through which all information is processed.

To apply the discussion of these factors specifically to bilingual children is difficult. The information contained in the neuronal network is obviously a factor related to specific individuals and how they perceive and understand the world around them. That perception and understanding may be related to genetic information that is coded in the brain at birth, it may be related to the information one acquires through interacting with the environment, or it may even be related to the language one uses to communicate that experience. The degree to which neurological factors affect the reading process still remains a mystery, but, I believe, it remains a mystery that needs to be examined more closely.

Perceptual Factors

Bruner and Minturn (1955) suggest that there are two different processes that must be considered during the act of perception:

> In perceiving there are two analytically separable processes. The first is a process of spatio-temporal-qualitative organization that makes possible such phenomena as figure-ground formation, the segregation of contours, the perception of plane surfaces, etc. The second process is usually called identification or recognition by which we are enabled to see an object *as* something. (p. 23)

Therefore, perception involves both the *act* of perception and the *understanding* of that perception. In a discussion of reading, both the act and the understanding need to be addressed.

I would like to first discuss the efficient operation of the neuronal network and its relationship to the *act* of perception. It is important to remember that, in reading, there is an act of perceiving letters or print in some form, an act of attaching some initial meaning to that perception, and an act of attaching other meanings to the meaning that has been derived from that perception. If a neuron is "mis-wired" neurologically so that something happens to interfere with the efficient processing of that visual information, the reading process will be physiologically short circuited, an obviously important factor to consider when discussing the reading process. This physiological short circuiting is what probably occurs during the reading process of a "learning disabled" child.

However, assume that, neurologically, the perceptual process is proceeding in an efficient manner, what then becomes important to the perceptual process? There are three aspects of perceptual processing that are important to the reading process: we see what we expect to see; we see what we want to see; and novelty, which is only determined by the reader himself and not by the reading materials, will attract attention.

First, consider the statement that we only see what we expect to see. The perceptual process, especially that part of the process in which identification occurs, involves an expectancy held by the organism, a physiological preparation of the neurons, and, in conjunction with that physiological preparation, a cognitive preparation that involves the selection of an appropriate category to use in response to the environmental stimuli (in reading, the print, the language, and the text message). The expectations and preparations an individual makes before he actually perceives that environmental stimuli probably determine, to a great extent, what is actually perceived and understood by that individual.

Related to this aspect of perception that we see what we *expect* to see is the idea that we see what we *want* to see. Yarbus (1967) experimented with the eye movements of subjects as they examined a picture for different types of information. With each new set of directions of what to look for came a variance in the eye movements of the subject when examining the picture. Undoubtedly the same occurs during the reading process. A reader's expectations and what he wants to learn or understand of a reading passage will greatly determine how much attention is paid to the graphic information on the page and also determine what degree of comprehension the reader has of any specific reading passage.

The final important aspect of perception is that novelty attracts attention. As a reader meets novelty of any kind on the printed page, he will cognitively register that novelty in some form. With an increase in the amount of novelty that must be assimilated by the reader will come an increase in the amount of cognitive effort a reader must expend to read; both will undoubtedly result also in only a minimum of information being obtained from the printed page. The novelty of the perception must therefore be considered to be an important part of the perceptual processing that occurs during the reading process.

Perceptual factors are also closely interrelated to the other factors. Perception is determined to a great extent by the information contained in the neuronal network. If we see what we expect to see and want to see, then the information we already possess must be working to affect what we learn from the environment. Sociocultural factors also undoubtedly influence perception in a similar way. If the sociocultural group has a means of influencing what one values, then perception will be controlled in this way. And the attitudinal and motivational factors are related to the perceptual factors in that we see what we want to see; if what we see does not match what we wanted to see, we have the choice of changing what we want to see or of not perceiving. The latter is the usual choice.

The importance of expectations and of novelty as short circuiting factors for the bilingual child needs to be emphasized. During the reading process, a child must have expectations about the code s/he is to read, the language that the code is transmitting, and, to a certain extent, have some expectations about the ideas that are being conveyed in the text before the reading process can proceed smoothly and easily. Athough developing expectations about the code is important to all children learning to read, when a child comes from a home where parents speak a different language from that of the language used at school, s/he must develop expectations about the language and probably also develop expectations about the values and attitudes that will be expressed by that language in books—as well as develop expectations about the code. When considering the requirements that novelty places upon the individual, it becomes apparent how the novelty of linguistic factors, sociocultural factors and perceptual factors for the bilingual child can all affect the reading process so that the maintenance of the needed attitude and motivation for him/her to deal with the task of reading is made difficult.

Expectations, desire, and novelty all play a large role in determining what will be perceived and understood by the bilingual child; and all should be considered in choosing the appropriate reading materials for him/her.

Cognitive Factors

How is the information that is perceived organized? What role does human memory play in both setting up expectations and forming conceptualizations? Lindsay and Norman (1977) offer an explanation:

> Expectations and conceptualizations must play a major role in the analysis. Our memory system maintains a record of past experiences, a general knowledge about the organization and format of the events we experience, and knowledge about the structure of language. The information from memory must become combined with the information from the sensory analysis. Just as the data-driven part of the analysis must play an important role, so too must a *conceptually driven* analysis become a part of the processing cycle. (p. 278)

In this statement Lindsay and Norman are suggesting the interaction of two different sources of knowledge that affect the processing of new environmental information: knowledge gained from the sensory data available in the environment and knowledge gained from the information that is already in existence in the individual's memory system. Both sources of knowledge, the sensory and the cognitive, interact so as to form the meaning obtained by the individual from the environmental stimulus, which is, in the case of reading, the printed page. Streiff (1978), whose work with Eskimo children was reported in conjunction with the previous section on sociocultural factors, suggests that an underlying schemata or organization of long term memory might be affecting the processing of stories by children who are outside the mainstream culture:

> It would appear that interpretation, or the way in which new information might be categorized in the long term memories of young Eskimo children, could be as important a potential source of apparent reading errors as linguistic inadequacy. (p. 54)

In considering cognitive factors, there are a number of important ideas to consider. First, there is an interrelated network of concepts contained in the human memory system (Lindsay & Norman, 1977). This network of concepts is a result of the learning done as an individual interacts with his/her environment. Second, these interrelated conceptual and ability networks will have an impact on one another so that they will either work together, which is the most efficient way for a cognitive process to be handled, or, in the case of a lack of information on any of the system's parts, they can work separately. Third, because there is an already existing web of concepts available to the individual, s/he will first attempt to assimilate any new information s/he encounters using those categories and concepts already available to him/her. It is in this way that this existing web of concepts present in the cognitive system may greatly determine the amount and kind of information a reader receives from a passage. No matter what the information is that exists on the printed page, be it the print, the language, or the message itself, it must first be processed by the already existing memory store before it can be assimilated by the individual. Information that is easily assimilated by the existing cognitive structures will be easily and efficiently incorporated; however, if the existing cognitive structures are inadequate for the task or are in disagreement with what needs to be assimilated, then the information will be distorted and then incorporated, or it may be ignored altogether.

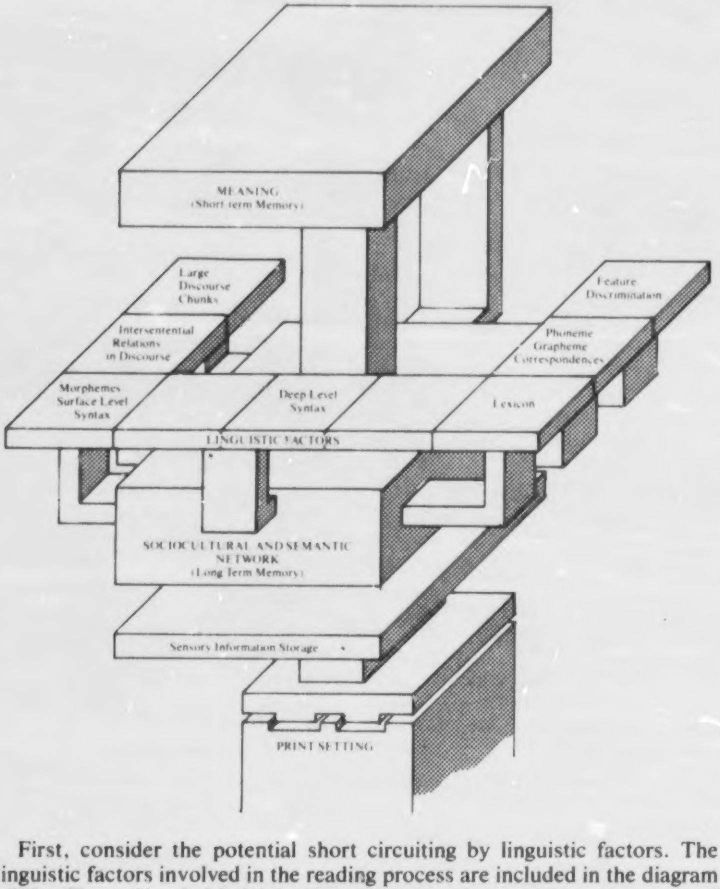
Therefore, it must be remembered that all information that an individual receives from his/her environment is first processed by the portion of the memory system s/he sees as being relevant to the task. Once the information is "screened" for its importance to the individual, only those aspects of the information that have meaning and importance for him/her will be assimilated. When applied to reading, this means that the intelligibility of any message for an individual will depend on his/her previous stores of knowledge of the print or written code, his/her knowledge of the language and the topic being discussed, his/her understanding of sociocultural presuppositions involved in the message, his/her interest and attitude toward the message, and the expedient operation of the neurological system. The short circuiting of any subsystem decreases the efficiency of the reading process and may interfere with the message being received from the printed page—for both the bilingual and the proficient reader.

The Short Circuit Model

Recall that I have attempted to include linguistic factors, sociocultural factors, attitudinal and motivational factors, neurological factors, perceptual factors and cognitive factors into this model (see Figure 1). The interaction of these factors in the reading process does not allow for the separate conceptual representation of each potential short circuiting factor, so the representation as it relates to the factors and their *interaction* will be addressed.

FIGURE I

THE SHORT CIRCUIT MODEL OF READING


MEANING
(Short term Memory)
Large
Discourse
Chunks
Feature
Discrimination
Intersentential
Relations
in Discourse
Phoneme
Grapheme
Correspondences
Morphemes
Surface Level
Syntax
Deep Level
Syntax
Lexicon
LINGUISTIC FACTORS
SOCIOCULTURAL AND SEMANTIC
NETWORK
(Long Term Memory)
Sensory Information Storage
PRINT SETTING

First, consider the potential short circuiting by linguistic factors. The linguistic factors involved in the reading process are included in the diagram of the Short Circuit Model in the separate and yet continuous range of boxes appended to the sociocultural and semantic network. These boxes, labeled with different divisions of linguistic units, are separated from one another because each has the potential ability to short circuit when information is lacking in any one of them. These boxes are continuous, however, because, although one box can short circuit without causing a "black-out" in the other boxes, the increasing store of information in any one box is to a great extent dependent upon the stores of information in the box which precedes it, and because, although a language system can be divided structurally into those separate divisions, these divisions are at times arbitrary. It must be remembered that in the case of a bilingual child, although s/he may not have the entirely appropriate stores of information regarding the language he/she is expected to read in, the linguistic stores of information *are not empty*. The information contained in these stores regarding his/her native language can be used by the child to help him/her decode the message in another language.

The Sociocultural and Semantic Network to which language is appended is the major part of the information processing mechanism involved in the reading process. Although this network is separate from the Sensory Information Storage Box and the Meaning Box, I consider the three to be only three different aspects of the same system, the memory system. These three boxes involve four of the factors described previously: sociocultural factors, neurological factors, perceptual factors, and cognitive factors. This major part of the information processing mechanism has been called "network" so as to signify that it is the network of neurons whose operation both stimulates the process of responding to environmental stimuli and acts as the medium through which the environmental stimuli are responded to.

In this way, perceptual factors and neurological factors are involved in this model. This network has been designated as a sociocultural and semantic network to imply that the sociocultural factors and the cognitive factors that form the semantic system used by an individual are in many ways determined by that neurological network and the perceptual interaction that network has with its environment.

Sociocultural factors have been included in this model attached to the neuronal network for two reasons. First, as discussed previously, I believe part of these factors are inherited and already "pre-wired" into a child at the time of birth as part of the neurological system; and, second, I believe that the interaction of the individual with the sociocultural factors in his environment, including the language and values of his particular group, will foster a specific type of learning by that neuronal network. Both aspects of the sociocultural factors are suggested as being involved in the neuronal network.

Neurological factors have been included in this model as the network to which all the other factors are related. As mentioned above, it is the medium (literally: a physical medium) through which all information is processed and assimilated.

Perceptual factors are related to the neurological factors because for perception to occur, the system of neurons must be operating effectively and efficiently; and they are related to cognitive factors because the storage of information in the cognitive system will, to a great extent, determine what information is perceived.

Cognitive factors have been integrated into the model in the form of a system of semantics. The cognitive organization of the neuronal network will determine the system of semantics developed and used by the individual to process environmental stimuli.

All of these factors in turn will affect one's attitude and motivation; however, the attitudinal and motivational factors have been included in this model in the form of a "plug." Without the appropriate attitude and necessary motivation, the system will not be forced into its operating state. An individual must become "plugged-into" the print setting for the reading process even to occur.

Simply describing the interrelationship of the factors in the model does not sufficiently describe the model itself, however. The other parts of the model that have also been included to more accurately describe what is occurring as an individual meets the printed page include the print setting and the three memory systems: sensory information storage, long term memory and short term memory. The print setting (Neisser, 1976) or what is "plugged-into" by the reader, has been included in this model because it is important to understand that a reader processes both print and any information surrounding that print which might aid in its interpretation. The print setting can include situational context, pictures that accompany print in storybooks, the shape of a logo that accompanies print, or a particular environment in which only a particular type of story is read. The context aids an individual in creating expectations about what is going to be read and, therefore, plays an important role in the interpretation of the print. This part of the model is of particular importance when considering the bilingual child's first attempts to read. With a great deal of context and support from pictures, reading will not be nearly as difficult as when s/he does not have that "print setting" to help him/her understand the message.

Another important aspect of this model is the inclusion of the three different memory systems discussed in the psychological literature: sensory information storage (sometimes referred to as iconic memory), long term memory (the sociocultural and semantic network in the model), and short term memory ("meaning" in the model). The memory systems have been included in this model to emphasize the importance of long term memory in selecting and screening the environmental information it meets and to emphasize the importance of long term memory in determining what will be assimilated from the information that has been selected and screened. Note the order of the memory systems. The sensory information storage system where the initial perception is recorded is placed first; long term memory where the initial perception is examined for meaning and relevance to the individual is placed second; and then short term memory, where the information that the individual decides is important to him/her is practiced and sent back into long term memory, is placed third. The active role that the reader, with his/her stores of information, plays in the reading process can not and should not be ignored in any reading model. The Short Circuit Model attempts to graphically represent why this is so.

The Short Circuit Model Applied to the Bilingual Reader

Although the application of the short circuiting factors to the bilingual reader has, in a sense, already been discussed, I would like to review some of the most important short circuiting factors in an attempt to emphasize how the Short Circuit Model can be applied specifically to the bilingual reader.

The short circuiting effects of language on the reading process of a bilingual child are obvious. Without a linguistic background in the language being used to convey a message, the child has very little chance of comprehending the message. This does not mean, however, that the bilingual child has *no* chance of comprehending the message. It must always be remembered that the bilingual child does have a language and does have life experiences that will also help him/her decode the message on the printed page—even if s/he does not have a good command of the language used to convey the message. The strengths that the bilingual reader can bring to the reading situation should, therefore, be used to help him/her overcome weaknesses, instead of assuming that the bilingual child has no information that will help him/her in decoding the message on the printed page.

The bilingual child also may have difficulty with the sociocultural assumptions involved in even the simplest of reading materials. Values are conveyed in all levels of reading materials. The degree to which those values are in accordance with the values held by the child will determine not only the child's comprehension but also the child's attitude and motivation toward reading.

Attitudinal and motivational factors obviously affect all readers; however, their importance to the reading process of a bilingual child needs to be emphasized. Not only is the child faced with the task of reading, but also s/he is faced with the task of acquiring a language, possibly acquiring knowledge about a different value system, acquiring different expectations about his environment and what types of behaviors are expected of him, and s/he also may be expected to acquire a different cognitive cataloging system in arranging ideas differently from what s/he has already been taught through his/her native language. The bilingual child has an incredible learning task facing him/her, and therefore needs a great deal of support so that the needed attitudinal and motivational factors will be available for the child to support that learning process.

The short circuiting effect of neurological factors, perceptual factors, and cognitive factors all have to deal with the information the child possesses at birth and the information he/she gains through his/her own interaction with the environment. To apply these factors to the bilingual child without taking into consideration each and every child's unique understanding of the world around him/her would be a distortion of the truth. The degree to which the experiences and languages of the author and the reader coincide will probably determine the degree to which the message understood by the reader will be congruent with the message intended by the author. But how often does that occur?

In understanding the reading process of a bilingual child, what the Short Circuit Model attempts to emphasize is not the difference between the bilingual reader and the monolingual reader, but rather the similarities that exist between them, the differences being only in terms of degree—not absolutes. The bilingual child does lack a great deal of information when faced with the task of reading in a language that is foreign to him/her about a topic that may also be foreign to him/her. However, a monolingual reader meets the same difficulties when faced with syntax too difficult for him/her to understand and a topic with which s/he has no experience.

In beginning to understand the reading processing done by all readers, we must begin to accept the fact that all children, both bilingual and monolingual, come to all reading tasks with a great deal of information; and, likewise, that both groups of children come to all reading tasks lacking a great deal of information. The bilingual child will probably have weaknesses in areas where other children may not have weaknesses; and to appropriately help the bilingual child deal with his/her weaknesses may require different instructional strategies and materials from those used with monolingual children. However, basically, the bilingual child is only another child who is attempting to master the magic code and its meaning on the printed page—no more, and obviously, no less.

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ED212138

IMITATIVE READING WITH BILINGUAL STUDENTS

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One of the greatest challenges facing educators today is the need to provide more effective reading instruction for the bilingual learner. From an educational standpoint, there has been little progress in the development of theoretically and pedagogically sound programs for teaching basic reading and language skills to a bilingual population.

The most fundamental approach for teaching bilinguals has been to change the mainstream teaching methods and materials, making teaching and learning proceed at a slower pace—the "louder and slower" method of instruction. Coupled with the tendency to slow the pace of instruction is the tendency to fragment instruction into isolated linguistic units of the reading process—phonemic/graphemic correspondences, syntactic and semantic features, morphological characteristics, etc.

This atomized approach to reading instruction tends to become counterproductive for the beginning bilingual reader. What is necessary is a format that will allow students to read stories, to deal with words in context, and to participate in conversational activities.

In short, a great deal of effort is spent on adapting conventional methods of teaching reading to second language learners. Adaptation has assumed that students are aware of the conventions of print or that they can learn these conventions independently. Consequently, second language learners are rarely given the opportunity to put the "pieces" of the reading process back together.

In the development of any teaching approach there are a variety of educational factors to be considered, one of which is the characteristics of the population. When designing a teaching method for use with a bilingual population, the major focus is to increase both language facility and reading ability; therefore, the entire approach is designed to provide the student with the opportunity to read, use, and listen to a standard or school language. Another major consideration is to treat the population, from a theoretical view only, as remedial. By assuming that the bilingual student be treated as remedial, the attempt to simultaneously pull together accomplishment, success, and productivity becomes a built-in prerequisite. With a comprehensive focus integrating the development of basic reading and language ability, student achievement is more easily monitored through standard measures.

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The Bilingual Student

Before describing the technique itself, some discussion of the bilingual student is mandatory. A suprising discovery for many new teachers in bilingual programs is the student's general lack of school language ability in either language. Educational researchers, for example Gumperz and Hernandez-Chavez (1972), support what most teachers in bilingual programs learn very quickly. Briefly stated, that knowledge supports the fact of a bilingual's language deficit in two languages rather than one, as measured in the school setting. The present day bilingual population, as viewed from a schoolman's point of view, for the most part has a problem not in one language but two languages, which is reflected in the acquisition of both reading and language skills as developed in the school curriculum. One might add that for bilinguals this school language deficit, for lack of a better term, is apparent in rural and urban bilinguals as well as in migrant populations.

In order to understand the rationale for using the Imitative Reading Technique (IRT) with bilingual students, it is useful to examine the characteristics of bilingual students that are pertinent to reading. Because of the controversy surrounding the issues of "cultural deprivation vs. cultural difference," many characteristics of bilinguals have been underreported. The purpose of this description and clarification is not to make assumptions about the causes of the characteristics, but to profile the students' abilities and disabilities in order to make appropriate educational recommendations. This procedure is the core of diagnosis and remedial techniques.

The first area of concern with a bilingual population is that of general verbal ability in standard English or school language. For example, a bilingual's verbal ability is characteristically below the average range on standard measures of vocabulary achievement. A second characteristic is that of listening ability in the areas of vocabulary and sentence comprehension, which also is often below the average range. Furthermore, speaking ability in school language is usually measured as less mature than peer counterparts who are not classified as bilingual.

Finally, when the student is administered a language preference test, the result is a measurable deficit in both languages or, to be more clear, "no language preference." Similarly when the bilingual child is administered measures of receptive and expressive verbal ability in standard or school Spanish, deficits are found in vocabulary, speaking, and listening ability. A list of characteristics for bilinguals was developed and then substantiated through clinical observations. These characteristics tend to be representative of the bilingual population eventually included in the imitative reading project:

1. Non-English-speaking.
2. "Limited" verbal ability in "school" English and in "school" Spanish.
3. "Limited" listening ability in situations where "school" English is spoken.
4. Mixed language preference (preference dependent on social variables).
5. "Limited" speaking ability (school language).

However, from studies of Labov, et. al. (1968), it is not always clear whether the language deficit is a reflection of the social structure of the school or the social structure of the peer group. Labov consistently found that students were much more expressive in peer group conversation sessions than when a researcher or teacher was present.

One further note is that characteristics two through five listed above are found to be concomitant with difficulties in learning to read. These reading difficulties are frequently reflected by achievement testing, the most universal approach for evaluating bilingual programs.

In addition, the bilingual student may exhibit any or all of the additional characteristics similar to those of a disabled reader:

6. Inadequate word identification skills (in a passage).
7. Inadequate comprehension of written material.
8. Low achievement in reading-related subject areas.

In short, the typical bilingual student facing difficulties in reading and language is inhibited by specific language factors directly related to predicting success in school. These factors impede normal achievement in most school reading and language programs and can result in educational problems needing remediation. Therefore, the development of an approach for teaching can be facilitated by an adherence to principles of remediation. It is from the standpoint of remediation that a program for teaching a bilingual population has been developed.

Background for Developing Imitative Reading

As mentioned earlier, the development of a viable approach for teaching reading and language skills to a bilingual population seems to be most appropriate when based upon principles of remedial teaching. Furthermore, the focus on integrating a good model of both reading and language practices was an essential component. The imitative reading technique combines principles of remediation and provides for a focused approach to reading and language development.

More than seventy years ago educators were superficially discussing an instructional technique that could capitalize on a student's ability to mimic the teacher. In 1908, psychologist Edmund Burke Huey described a technique in which a student simultaneously reads along with the teacher. It was a simple one-step process and actually provided a student with a good teacher-model to follow. Mention and probably use of Huey's method disappeared until R. G. Heckleman (1962, 1966, 1969) described a similar technique that was essentially a system of unison reading by the instructor and student. Heckleman's technique, the "Neurological Impress Method," made the student point to each word as it was being read as a necessary element of a one-step process.

Other educators such as William C. Jordan (1967), Paul Hollingsworth (1970, 1978), and Carol Chomsky (1976) developed methods of unison reading very similar to Huey and Heckleman. The major difference in their methods was that they outlined a two-step process in which the student first follows along silently and simultaneously with a taped recording of the printed text. Secondly, the student reads along with the recording. The precise amount of reading and listening was not reported by any of the researchers. A compounding problem with each description of this imitation method was that although students were able to listen to the selections as they were being read the teacher could never really be certain if the students attempted to read independently. There was, in addition, a very limited control for evaluation and a limited provision to provide any correctional procedures for the student. Nevertheless, the potential for student accomplishment seemed to be available.

The Imitative Reading Technique (IRT)

The imitative reading technique (IRT) draws from the simultaneous reading first developed by Huey (1908) and described by others I have previously discussed. Built into the technique for a more comprehensive approach to teaching reading and language skills to bilinguals is the opportunity for increased student accomplishment, individual and group success, and productivity. IRT is a three-step process to be used with both individuals and small groups.

Before beginning IRT it is important that the teacher carefully select the reading material to be used. The teacher will need to assure the students that the material is appropriate for their age, interests, and grade level, but most of all they will definitely be able to read and learn from the material successfully. At first, the teacher should select books containing short passages for reading. When students become aware that they can be successful and productive in a reading and language situation, longer and more sophisticated materials can be used and continued from day-to-day. Finally, it is essential that both students and teacher have their own copy of the book or reading material.

Using Imitative Reading Technique (IRT)

Imitative reading should follow three distinct steps. First, the instructor orally reads a sentence or phrase, pacing the reading and using intonation. The student follows along silently while the teacher reads. If the teacher is unsure of the student's ability to follow along, finger-pointing or a window-card can be used during this step. After using this technique, some teachers found that such monitoring devices soon become unnecessary and interfere with the teaching process itself.

In the second step, both the teacher and the student orally read the same phrase or sentence with the teacher starting about one word ahead of the student. Pacing and intonation by the teacher is very important at this point. It is imperative that pacing continue at the same rate as in the first step of the model. If the student should hesitate or fail to continue at any time during step two, the teacher should continue to read orally keeping the same pace until the entire phrases or sentence is completed. In many instances when the teacher hears that a student is having difficulty with a particular word or phrase, a repeat of this step may be needed. If there is still a problem, the teacher may return to step one.

In the final or third step of IRT, the student independently reads (orally) the same phrase or sentence used in steps one and two. If the student is unable to read aloud a word or pauses for more than the few seconds that it would normally take to recognize and pronounce the word, step two should be repeated. If during step three the student continues to have difficulty with the word, the teacher should point to the word in the student's book and pronounce it for the student. The student is then asked to repeat the word and instructed to begin step three. The process is continued until the student is able to read in step three without aid. If the teacher feels that the student is not using language and reading fluently in the final step, then the entire process should be repeated using the same sentence or phrase.

Although IRT appears at first glance to be a laborious process due to its built-in success factor, bilingual students respond quite well to it. Initial use, however, should be limited to no more than ten minutes per session; otherwise, the effort and concentration needed to attend to this type of task may break down rendering IRT a rather ineffective technique. Teachers using IRT have found that at the first sessions the students became easily frustrated. Therefore, one should be careful not to apportion too much time in the beginning stages of using this technique.

As students become more familiar with IRT procedure the initial reading by the instructor in step one gradually increases. When a transition is made from phrases to sentences or from one sentence to two, the student, of course, should be informed of any change in the procedure, especially in such a manner that will enhance the individual's self-confidence. As IRT is used, and the student becomes familiar with the method, whole paragraphs may be employed in the first step of the three-step process with a great deal of success.

IRT as a teaching approach provides a uniform and structured three-step procedure. When carried out as described, it allows for a bilingual student to be successful and productive during reading and language activities.

IRT Compared to Conventional Bilingual Methods

An experiment was conducted with bilingual students to substantiate the efficacy of IRT over conventional teaching methods used with bilingual students. Sixty Hispanic students enrolled in an urban bilingual education program in grades one, three, and six participated in the study. Twenty bilingual students from each grade (one, three, six) were randomly assigned to either the experimental (IRT) group or the control group. The IRT group received one to five hours per week of IRT instruction for ten weeks. The control group remained in their normal classroom, instructed by typical or conventional methods.

To assess any gains made by those bilingual students instructed with IRT, all pretest and posttest scores were analyzed using a t-test. A t-test was initially run on both control and experimental groups at each grade level after each group had completed all pretest measures. Pooled variance estimates indicated no statistical significance ($p = .05$) for all pretests, suggesting that at the outset all groups were equal. After instruction was completed a t-test was computed to analyze the near difference scores (posttest minus pretest) as was originally planned.

An examination of the data reveals that the use of IRT in bilingual classes significantly improved students' ability to immediately recognize and correctly read words (sight vocabulary), reading or meaning vocabulary, and oral reading ability. In the area of reading comprehension there were significant gains between groups as measured by standardized reading tests (Gates-MacGinitie Levels A, B, C) in grades one and three. In grade six there were no significant differences ($p = .05$) for conventional and IRT groups in reading comprehension.

Although a measure of language fluency was not an original part of the experiment, a pre-and posttest measure of the quality of language was determined. An adaptation of the Monroe Language Scales (Monroe, 1955) was clinically used. The evaluation of these scales do not easily lend themselves to a statistical analysis because of the highly subjective nature surrounding the measure of the quality of oral language. It appears, however, that IRT groups dramatically increased in their ability to use standard English over the control group. The differences, as might be expected, were more evident in the first grade and seemed to become less evident with older students. It should also be pointed out that IRT was much more enthusiastically received by the younger students. The major differences in language usage for all grade levels are partially reflected by the students' ability:

1. to use subject-verb agreement
2. to respond or initiate conversation in complete sentences
3. to express ideas clearly
4. to use a wider range of speaking vocabulary
5. to speak with more self-confidence.

It appears that the use of imitative reading as part of a total bilingual program produces a significant increase in the areas of sight and meaning vocabulary, oral reading, and language fluency. The area of reading comprehension seems not to be affected by this technique in the intermediate grades.

The data support the belief that IRT is a viable method for teaching bilingual students. Although there is no empirical support as yet, there is strong evidence that the use of IRT will positively enhance student achievement in Spanish.

Summary

The imitative reading technique can be a rewarding and productive approach for use with bilingual readers. Allowance for immediate student response in a very close student-teacher interaction seems to provide an opportunity for success and accomplishment other techniques lack. The mere observation that IRT students were selecting more age appropriate reading materials was a direct reflection of their growing confidence. The bilingual students in the conventional group, for example, did not attempt any reading that could be classified other than remedial.

In conclusion, as a remedial technique IRT offers built-in success throughout the three-step process. Bilingual students respond very well to this approach, possibly because it allows for a consistent productivity in reading and language. Further, IRT gives each student the opportunity to self-select reading materials.

Finally, the IRT appears to create and develop an awareness of the linguistic features of printed text. A lack of linguistic awareness of syntactic, semantic and prosodic features of printed language is inherent in reading disability (Fries, 1963). Furthermore, bilingual students who exhibit limited school language proficiency as well as other characteristics discussed earlier, would presumably have little awareness of the linguistic features of printed text. To the extent that the IRT develops linguistic awareness, it is a potentially powerful technique for developing the reading proficiency of bilingual students.

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ED212139

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SPANISH LANGUAGE ARTS AND READING MATERIALS FOR THE INTERMEDIATE GRADES*

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For the past eleven years, Title VII programs have been implemented in a number of school districts throughout the United States and its territories. The majority of these programs have been basic programs developed for limited-English-proficiency students at the elementary grades.

Indispensable to the success of these programs has been the availability and use of bilingual/bicultural materials that have been developed by the school districts implementing the programs, by materials development centers funded through Title VII, and by commercial publishing companies. By and large, these materials have been found to be culturally relevant and linguistically appropriate for students in the various elementary grade levels. Some school districts with unique programs have undertaken the task of developing bilingual materials on their own; that is, without the assistance of federal monies.

A limited number of Title VII programs are implementing bilingual education at the intermediate grades; the sixth, seventh, and eighth grade levels. Very little material, if any, has been published to meet the unique linguistic needs of Spanish-speaking children who have never been exposed to formal instruction in language arts and reading. *Línea abierta; comunicación en español, nivel 2 y nivel 3*, developed by the author in collaboration with the Bilingual Materials Development Center in Fort Worth, Texas, and published by the Evaluation, Dissemination, and Assessment Center, Austin, Texas were designed to meet these specific needs.

Línea abierta; comunicación en español, nivel 2 is the second in a series of three texts prepared for the teaching of Spanish language communication and reading skills to native Spanish speakers in grades six through eight. Each level consists of a teacher's manual and a student text, which together constitute a complete course of study.

Línea abierta; nivel 2 is designed for Spanish-speaking students who already demonstrate a certain level of oral proficiency in the language. Instead of utilizing a second language approach, the materials focus on language arts content that will enable students to develop their vocabulary, grammar, reading, and writing skills. The four basic skills of language learning (listening, speaking, reading, and writing) are not treated in isolated fashion but are integrated within the content of the text. The units contain activities that, unlike those commonly used in second language instruction, generate

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oral and written communication. There is constant emphasis on a wide range of Spanish decoding skills to be mastered by the student rather than a rote memorization of printed words.

Format of the Student Text

The student's text contains twelve units with the following titles: "*La expedición de Juan de Oñate*"; "*La visita inesperada*"; " *El éxito de Marielda*"; "*Trabajamos juntos*"; "*La entrevista*"; "*Aquí y allá*"; "*La desobediencia y el castigo*"; "*Culpable hasta ser pronunciado inocente*"; "*Sé prevenido*"; "*El accidente*"; "*José Alfonso*"; and "*Heroísmo*". Each unit consists of four parts: *Lectura* (Reading Selection), *Desarrollo de Vocabulario* (Word Study), *Estructura* (Syntax) and *Composición* (Composition). Each of these parts concentrates on a different area of language skills development.

Lectura (Reading Selection). This section provides the student with high interest reading selections at various levels of difficulty. The readings deal with different topics and themes: history ("*La expedición de Juan de Oñate*"); individual responsibility ("*La visita inesperada*"); a spirit of collaboration and teamwork ("*Trabajando juntos*"); job interview and career awareness ("*La entrevista*"; continuing friendships ("*Aquí y allá*"); the reward of disobedience ("*La desobediencia y el castigo*"); making biased judgments about individuals ("*Culpable hasta ser pronunciado inocente*"); the challenge of responsibility ("*Sé prevenido*"); moods and attitudes ("*El accidente*"); manifestations of pride in one's culture ("*El éxito de Marielda*" and "*Heroísmo*"), and cultural identity ("*José Alfonso*"). The reading material has a controlled sentence structure that increases in difficulty and complexity. The exercises and activities of this section should be so directed as to allow the students to express their views and personal experiences during the discussions of the reading selections. Since there is no formal evaluation for this section of the text, the ultimate goal is the development of facility in oral communication and in the use of newly acquired vocabulary and idiomatic expressions.

Desarrollo de Vocabulario (Word Study). This part of the text is designed to build vocabulary and to stimulate reading and writing skills. The student is introduced to the parts of speech, synonyms, and ways to form new words. Specifically, the content of this section deals with prepositions, roots and prefixes, synonyms, infinitives, vocabulary necessary to fill out a job application, adverbs, suffixes, antonyms, vocabulary used in newspaper want ads, compound words, dictionary skills, and loan words. The concept is presented first; then, it is followed by an explanation and some examples are provided for reinforcement. For example, in the presentation of the concept of prepositions, the teacher writes several prepositions on a chart or poster board. She explains the meaning of the term "preposition", its function, and then shows the class the list or roster of prepositions that she has written on the chart. Sentences in which the same preposition is used or several prepositions appear are then shown to the students as a form of reinforcement. A variety of activities facilitate the presentation of the concept. Subsequent exercises furnish the students with opportunities to practice the use of the preposition in sentences.

Estructura (Syntax). This section is devoted to sentence structure and verb tenses: imperfect, preterit, future, and conditional of regular and irregular verbs. It also deals with possessive adjectives and pronouns as well as with the comparison of adjectives and adverbs. The section stresses the practical application of traditional grammatical concepts. Every grammatical item is presented and illustrated with examples and then reinforced with a number of exercises. The exercises provide numerous learning situations that are relevant to the student. Each exercise is preceded by an example to help clarify instructions for the student. The ultimate goal is to develop skills in the students that will enable them to express their thoughts most effectively and with the greatest clarity.

Composición (Composition). The last part of the text is a section designed to develop writing skills in the students. It concentrates on practical written communication and includes a variety of exercises to encourage pupils to use newly acquired vocabulary and writing techniques. The students are encouraged to integrate vocabulary and grammatical concepts from previous instruction as much as possible. As in other sections of the text, this part includes an evaluation that asks students to look at a picture or illustration and to write five simple sentences to describe it. A list of five infinitives is given and the student is asked to construct sentences using the preterit tense to describe the illustration.

The text has numerous and interesting illustrations that are attractive and eye-catching. There are also crossword puzzles, word search games, riddles, end of lesson or unit tests consisting of true-false statements, matching sections, fill-in-the-blanks, and selection of the appropriate word to form complete sentences. In an effort to provide comic relief, *Parlanchín* is presented at the end of each unit. Whether or not it is used as a basis for class discussion is left to the discretion of the teacher.

Glossary. At the end of the text, the student will find a glossary that contains an alphabetized list of words and expressions that appeared in the reading selections. The word entry is given with a simple definition or synonym followed by a sentence illustrating its usage. For example, the word "*académico*" is defined as "*relativo a los estudios*". This is followed by an example of how the word is used in a sentence: "*Quería discutir un asunto académico*".

A "Scope and Sequence" chart outlining the substance of each section in each unit appears in Table 1 so as to familiarize the reader with the content of the student text of *Línea abierta, nivel 2*.

Format of the Teacher Manual

One teacher's edition is composed of twelve units, each of which contains four sections. Each of these concentrates on a particular area of language instruction. The areas are presented in the following sequence which parallels those of the student's text: *Lectura* (Reading Selection); *Desarrollo de Vocabulario* (Word Study); *Estructura* (Syntax); and *Composición* (Composition). No specific amount of time has been suggested for the coverage of each unit. Teachers might take two or three weeks to cover a particular unit. This will depend on a number of factors: progress of the group, time constraints imposed by the curriculum director, and the difficulty and complexity of the concepts to be taught. The units have been organized in such a manner that the initial emphasis is placed on the development of listening

TABLE 1

SCOPE AND SEQUENCE
Spanish—Level II

UNIT	LECTURA	DESARROLLO DE VOCABULARIO	ESTRUCTURA	COMPOSICION
1	*La expedición de Juan de Onate* (Personal account)	Prepositions	Preterite tense of regular and irregular verbs	Simple sentences with the preterite tense (includes changing present to preterite)
2	*La visita inesperada* (Individual responsibility)	Roots and prefixes	Imperfect of regular and irregular verbs	Simple sentences with the imperfect tense
3	*El éxito de Marielda* (Cultural pride)	Synonyms	Possessive adjectives and pronouns	Simple sentences with possessive adjectives and pronouns
4	*Trabajando juntos* (Teamwork)	Infinitives	Future tense of regular and irregular verbs; *ir* used to express the future tense	Simple sentences with the future tense and *ir* used to express the future
5	*La entrevista* (Career awareness)	Vocabulary for job questionnaires	Conditional tense of regular and irregular verbs	Compound sentences with the conditional tense
6	*Aquí y allá* (Maintaining friendships)	Adverbs	Comparison of adjectives and adverbs	Comparative and contrastive elements in sentence development
7	*La desobediencia y el castigo* (Cause and effect)	Suffixes	Preterite and imperfect tenses	Using preterite and imperfect tenses in simple and compound sentences

TABLE 1—Cont.

UNIT	LECTURA	DESARROLLO DE VOCABULARIO	ESTRUCTURA	COMPOSICION
8	*Culpable hasta ser pronunciado inocente* (Making biased judgments)	Antonyms	Direct and indirect object pronouns	Compound sentences with direct and indirect object pronouns
9	*Sé prevenido* (Responsibility)	Vocabulary for newspaper want ads	Reflexive verbs and their pronouns	Complex sentences with reflexive verbs
10	*El accidente* (Changing attitudes)	Compound words	Present progressive; regular and irregular verbs	Complex sentences with the present progressive
11	*José Alfonso* (Cultural identity)	Dictionary skills	Imperatives	Complex sentences, including imperatives
12	*Heroísmo* (Cultural pride)	Loan words	Review of simple, compound, and complex sentences including all grammar taught so far	Writing clear and concise sentences (preparatory for writing paragraphs)

and speaking skills as the students are acquiring competence in reading and writing skills. The sequence of the components and a brief explanation of each is given below.

Concepts. The concepts express the central ideas in each unit. The units contain four main concepts that correspond to the four areas of the activities section.

Objectives. Each unit contains objectives that specify some observable or measurable behavior that the student is expected to demonstrate at the end of each section. For example, in unit three the *Lectura* section states its objective: "The student will contribute ideas in a group discussion describing how a person may use his or her talent to demonstrate cultural pride." A different objective may be found in another section of the same unit. The expressed objective is always appropriate to the particular section of the text that focuses on the development of a particular skill or set of skills. For example, in *Desarrollo de Vocabulario*, one reads this objective: "Given a word, the student will choose the correct synonym from a list of words."

Activities. This area embodies a variety of instructional activities that the teacher might consider as she prepares her lesson plans. Students are expected to use their own paper to work out most exercises, except for word puzzles, which appear after the tests at the end of the unit and are perforated for easy duplication. Activities appearing as pull-out pages are numbered sequentially throughout the text A1 through A14. Instructions and answer keys are in the activities section. The student text has been reduced in size and is repeated in the teacher text together with the answer keys to the student exercises.

Games. Most units include one or more games that may be used to reinforce grammatical concepts. Some of these games are: *Agárrala y dila* for vocabulary development; *Juntando los pares* used to reinforce sentence structure; *Concordancia* to be utilized in the reinforcement of writing skills in composition.

Evaluation. This section includes a set of tests (*Pruebas*) that serve to measure the student's mastery of the concepts taught. Copies of the tests may be made for class distribution and they may be used as a pretest and/or posttest. Students who score with an 80 percent accuracy or higher on the pretest may proceed with the next lesson though a different proficiency level may be determined by the teacher. Keys to the tests precede the perforated test pages at the end of the unit. Each test is identified by area of study and unit number.

Suggested Methods and Techniques of Instruction. In teaching the Spanish speaker to develop his or her first language skills, the teacher should begin with the level and degree of linguistic proficiency that the student already demonstrates. Though this course of study does not teach the Spanish alphabet, the teacher may go ahead and begin by teaching the sounds of the vowels and the consonants of the alphabet if the students are not familiar with them. She should also devote some time to the explanation of the formation of diphthongs and syllables as well as accentuation.

The sensitive teacher will utilize the linguistic and cultural strengths that the students bring to school. The variety of backgrounds of the students will permit them to contribute interesting ideas and experiences to classroom discussions. Oral reports requiring students to present ideas on specific topics are strongly suggested. The students can develop their writing skills as well as display mastery of vocabulary and use of idiomatic expressions by writing compositions related to the reading selections of a particular unit or to their everyday experiences. Whatever the assignment, the instruction should be conducted in Spanish at all times.

Developing the Activities. Each unit follows the same basic organizational plan: *Lectura*, *Desarrollo de Vocabulario*, *Estructura*, and *Composición*. Each section in the teacher's manual contains explicit teaching instructions, examples of new concepts, boxed duplication of student text including exercises, and keys to all student exercises.

The activities contain a variety of learning experiences that range in difficulty from easy to complex. The teacher may adapt the activities of the individual student accordng to his linguistic needs, reading ability, and level of comprehension. In addition to the material provided in the manual, the teacher should rely on her own creativity, resourcefulness, imagination, experience, and foresight to enhance the learning experiences of the pupils.

General Methodology. The methodology used in this text discourages grammar rule recitations or incessant drills of verb conjugations and sentence patterns. The most important learning tool is practice with the language in order to gain control of sounds and sentence structures that might seem to be new to the student. Emphasis is placed on the acquisition of language skills for active communication; therefore, oral practice for the students who are native speakers of the language is encouraged. Basic sentences, short readings, narratives, and topics for discussion are provided for this purpose. The intent is to make the language learning experience a meaningful one capable of developing the student's competencies to the highest level possible.

The teacher's manual also provides suggestions for language assessment, evaluating and determining students' language proficiency, grouping strategies, and activities that can be implemented in large or small groups of students. The manual adequately complements the student's text in the design and implementation of the concepts, objectives, and activities, which have as their main goal the development of skills in speaking, reading and writing Spanish.

Línea abierta, comunicación en español: Nivel 3

Continuing the development of Spanish language arts and reading skills at the eighth grade level, *Nivel 3* assumes that the students have already learned and mastered the concepts and completed the activities of *Nivel 1* and *Nivel 2*. This level consists of a teacher text and a student text.

Nivel 3, which comprises twelve units of three sections each, has been prepared to meet the unique linguistic, cultural, and reading needs of the Spanish-speaking eighth grader. This level provides the students with a number of learning experiences that focus on the development of the cognitive and affective domains, as well as the skills of listening, speaking, reading, and writing. At this grade level, the last two areas—reading and writing—receive major emphasis as is evident from the number and variety of challenging exercises that accompany each of the lessons and sections.

The materials prepared for use at this level follow the Scope and Sequence Chart with the outlined skills for each of the sections that appears in Table 2. As in the case of *Nivel 2*, the concepts and skills taught become increas-

TABLE 2

SCOPE AND SEQUENCE

Spanish—Level III

UNIT	LECTURA	ESTRUCTURA	COMPOSICION
1	*El derecho de regresar* (Culture shock)	Present perfect tense Indicative	Writing simple, compound, complex, and compound-complex sentences
2	*¿Sueño o fantasma?* (Interpretation)	Pluperfect tense Indicative	Topic sentences
3	*El crucifijo* (Recognizing descriptive words)	Past and present participles as adjectives	Supporting ideas
4	*Las fábulas* (Introduction to fables)	Future perfect tense Indicative	Sequencing
5	*La fiera* (Fables)	Conditional perfect tense Indicative	Descriptive paragraphs: controlled writing
6	*El recaudador* (Opinion as distinguished from fact)	Review of structure lessons 1-5	Descriptive paragraphs: actual writing
7	*El susto* (Probability vs. certainty)	Relative pronouns	Narrative paragraphs: controlled writing
8	*Los dos volcanes* (Cause and effect)	Present tense Subjunctive	Expository paragraphs: controlled and actual writing
9	*El águila y la serpiente* (Understanding behavior of characters)	Indirect commands and present perfect subjunctive	Composing and developing a topic: controlled writing; outlines

TABLE 2—Cont.

UNIT	LECTURA	ESTRUCTURA	COMPOSICION
10	*El destino de Mónica y Gerardo* (Drawing conclusions)	Imperfect tense Subjunctive	Composing and developing a topic: actual writing
11	*Mónica recuerda* (Thinking critically)	Pluperfect tense Subjunctive	Personal letters
12	*Gerardo recuerda* (Recalling factual details)	Review of structure lessons 7-11	Business letters Addressing an envelope

ingly difficult and more complex. Skills taught in *Nivel 2* are reinforced in *Nivel 3*, with varied exercises that are intellectually stimulating. The nature and content of the reading selections, the level of the new vocabulary, and the advanced grammar discussed in the text combine to present to the native speaker of Spanish an extremely valuable learning resource.

Format of the Student's Text

The student's text consists of twelve units, each of which is composed of three parts or sections: *Lectura* (Reading), *Estructura* (Syntax), and *Composición* (Composition). Table 2 outlines the main topic or theme treated under each of these sections. The *Lectura* comprises high interest short stories that present a theme, some elements of grammar to be elaborated later in the *Estructura* section, and a composition.

Lectura. The reading selections are based on aspects of the culture of the Spanish-speaking student and the thematic content is as follows: culture shock ("*El derecho de regresar*"); fantasy vs. reality ("*¿Sueño o fantasma?*"); the teaching of a moral principle ("*Las fábulas*" and "*La fiera*"); religious faith and mystery ("*El crucifijo*"); fact vs. opinion ("*El recaudador*"); probability vs. certainty ("*El susto*"); cause and effect ("*Los dos volcanes*"); understanding behavior of characters ("*El águila y la serpiente*"); fate ("*El destino de Mónica y Gerardo*"); thinking critically ("*Mónica recuerda*"), and recalling factual information.

Carefully selected illustrations are an integral part of each of the reading selections. This is in evidence beginning with the first selection, "*El derecho de regresar*", and concluding with the final story "*Gerardo recuerda*." Each of the selections is followed by appropriate exercises, such as items with underlined words that students are asked to define by circling one of the four choices, and a series of ten questions on the story to be answered with complete written sentences.

Estructura (Syntax). This section deals with elements of grammar such as the compound tenses (present, past, future, and conditional perfect), present and past participles and their uses, relative pronouns, the subjunctive mood (present, imperfect, present perfect, and pluperfect), as well as two review lessons covering chapters one through five and seven through eleven.

An abundance of exercises appears in this component of the lesson. There are numerous exercises of various types. Some are designed to reinforce and test the student's knowledge of the compound tense learned; others call for changing infinitives into present participles and past participles or placing an accent on past participles that bear a written accent. A type of exercise may call for students to write sentences with past participles or using the appropriate tense forms in answering a set of questions. Another exercise permits students to discuss their responses orally. Still a third type of exercise may allow students to change the tense of a given verb as, for example, substituting the present perfect for the preterite and vice versa.

Composición (Composition). This last section of a unit stresses the development of writing skills. It concentrates on practical written communication and includes a variety of exercises designed to encourage students to improve their style through the use of newly acquired sentence structures, vocabulary and idiomatic expressions. Pupils will be presented with opportunities to practice and master different types of sentences: simple, compound, complex, and compound complex. They will be encouraged to integrate vocabulary and grammatical concepts from previous learning experiences as much as possible.

An example of the material covered in unit one in the *Composición* will illustrate one of the approaches used in teaching the material to the students. The teacher discusses the four types of sentences as well as the definition of principal clause and subordinate clause. The types of exercises used call for the identification of the sentence in terms of simple, compound, or complex, as well as changing tenses within the sentence. Students are also asked to write sentences in the present perfect tense according to the models given.

With each of the sections of this particular unit, the authors have included some games in order to add interest to an otherwise dull presentation of grammar. Quite appropriately, *Lectura* contains the detective game, while *Estructura*, with its game *Quita y pon*, enables the students to review the past participles of the verbs and the formation and use of the present perfect tense. *Composición* and its game of *Charada* assist the students in reviewing the different kinds of sentences.

Glossary. Of particular use to the student is the glossary containing an alphabetized list of words used in the reading selections that might be new or unfamiliar to him. The word entry is followed by a simple definition or synonym with a sentence to illustrate the use of the word or idiomatic expression. The glossary appears at the end of the text.

Format of the Teacher's Manual

The teacher's edition is composed of twelve units, each containing three sections. Each section concentrates on the development of a particular area of language instruction. The areas are presented in the following order: *Lectura* (Reading Selection), *Estructura* (Syntax), and *Composición* (Composition).

The units have been so arranged as to initially stress the development of listening and speaking skills and gradually shift the emphasis to reading and writing. It may take from two to three weeks to teach a particular unit, depending on the progress of the group, time constraints, and the complexity of the concepts taught. A brief explanation of the components that integrate the manual follows.

Concepts. These present the key or principal ideas of the unit. Each unit contains three main concepts that correspond to the three areas of emphasis in the activities section.

Objectives. Each unit includes objectives that specify some observable or measurable behavior the student is expected to demonstrate at the end of each section. The following examples of concepts and objectives are taken from Unit two, "*¿Sueño o fantasma?*". In the *Lectura* section of the unit, the concept is interpretation of the reading selection and the objective is stated thusly: "Given questions about a reading selection, the student will be able to express an opinion about the events." In *Estructura*, the concept is the conjugation and use of the pluperfect indicative and the objective reads: "Given an infinitive, the student will be able to give the pluperfect indicative form of the verb." The concept for *Composición* is paragraph construction (introduction to the topic sentence), and the stated objective is: "Given a paragraph, the student will be able to compose an appropriate topic sentence."

Activities. This section embodies a variety of instructional activities for the teacher's consideration in the preparation of the lesson plans. Students are expected to use their own paper to prepare the written exercises, except for word puzzles, which appear after the tests at the end of the unit and are perforated for easy duplication. Activities appearing as pullout pages in the teacher text rather than as exercises in the student's book are numbered sequentially A1 through A20. "*Acertijos*" (Fill in the blanks), "*crucigramas*" (Crossword Puzzles) and other challenging exercises and assignments form part of the collection of activities. Instructions and answer keys are found in the activities section. The student text has been reduced in size and inserted in the teacher's manual together with answer keys to the student exercises.

Games. Most units contain several games that may be utilized to reinforce grammatical concepts. Of particular interest and challenge are the games found in unit six. Both games—*Construyendo rascacielos* and *El velodromo*—provide the students with intellectual exercises in which they are asked to recall the formation of verb tenses and to review the conjugation of verbs studied in units one through five.

Evaluation. A set of tests designed to measure student mastery of the concepts taught for each area is found in this section. Copies of the tests may be made for class distribution and the instruments may be used as pretest and/or posttest. Though a different proficiency level may be designated by the teacher, students who score 80 percent or higher on the pretest may proceed with the next lesson. Keys to the tests precede the perforated test pages at the end of the unit. Each test is identified by unit number and area of study.

As in Nivel 2, the authors of Nivel 3 suggest methods and techniques of instruction, language assessment, and grouping strategies. The teacher's manual contains explicit teaching instructions, examples of new concepts taught, boxed duplication of the student text, including exercises (reduced) and keys to the students' exercises.

As one compares the substance of Nivel 2 and Nivel 3, one notices a vast difference in the content of the section related to *Estructura*. This deals with the more complex forms of sentence structure: compound tenses, the four tenses of the subjunctive, and the variety of sentence structures. The *Lectura* section incorporates brief reading selections, somewhat distinct from those of Nivel 2 in their incorporation of new and more complex sentence patterns. The variety and complexity of the different elements of sentence structure and the reconstruction of these into meaningful expressions of thought contributes to the development of more advanced writing and composition skills in the students. Both Nivel 2 and Nivel 3 possess high quality in the number, diversification, and relevance of illustrations that beautifully enrich the content of the texts. The alert, creative, and resourceful teacher of Spanish-speaking students in the intermediate grades will find these publications extremely useful and appropriate for the development of learning skills in reading and language arts in Spanish.

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THE DEVELOPMENT OF CULTURALLY RELEVANT SPANISH LITERACY MATERIALS

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A number of critical needs have been identified by persons working in the field of bilingual-bicultural education. The need for culturally appropriate instructional materials to teach literacy in the non-English home language and the lack of specialists to carry out this work has been apparent since the inception of bilingual education programs in the late 1960s and early 1970s. Judging at least from the number of materials produced, the last ten years have seen some progress, but the need continues to grow and much work remains to be done.

Over the past few years studies in the area of non-English literacy materials production have shown a strong tendency for many of the Spanish-English bicultural programs to import materials from *outside* the child's personal, cultural and linguistic community, therefore requiring extensive modification and adaptation on the part of the classroom teachers. If the assumption is correct that many of the literacy materials used in bilingual programs are based upon experiences that are incompatible or far removed from the history, culture, language, and traditions of Spanish-speaking children, there then exists a critical need to particularize materials from the standpoint of the child and his local and regional community, at least for the elementary school years.

The purpose of this paper is to discuss a number of issues related to the production of literacy materials for a particular population of Spanish-speaking children—the Chicano children of New Mexico. Many of the ideas that will be discussed here grew out of an EPDA (Education Professions Development Act) bilingual materials development institute held at the University of New Mexico in the early 1970s under the direction of the late Dr. Dolores Gonzales. The institute was designed to train curriculum specialists in the development of bilingual instructional materials as well as to produce literacy materials in the areas of reading, science and social studies, specifically for Spanish-speaking New Mexico children. The *Tierra de Encanto* reading series, which is designed to help New Mexico children acquire oracy and literacy skills in Spanish, is a direct product of this institute. Although many of the ideas discussed in this paper had their genesis in the institute, new information and more contemporary observations and reflections have also been added to more appropriately fit changing needs and progress that has occurred in the general area of bilingual materials production.

Specifically, the paper is divided into three parts: a brief historical survey

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of the way in which instructional materials available for use with Spanish-speaking children have contributed to cultural estrangement and alienation from their own particular home and community culture; a discussion of sociolinguistic issues involved in the preparation of instructional materials designed to move children into bi-oracy, bi-literacy, and therefore, biculturality, and finally a specific look at a particular instructional material, the *Tierra de Encanto* reading series, and the way in which it was particularized to meet the needs of Spanish-speaking New Mexico children. This paper is offered in the hope that these ideas and the experiences gained in the institute can be shared and enlarged upon by others who are involved in creating their own models for the development of culturally relevant literacy materials.

An Historical Review

An historical survey in the early 1970s revealed almost a total absence of instructional materials that dealt in any serious way with the lives and experiences of Chicano children. This pattern of neglect and omission extended to other minority groups as well, including Blacks, American Indians and Asian Americans, and had the net effect of perpetuating the non-entity status of minority groups as "peoples" without histories. During this time, it was evident that "Dick and Jane" materials with their emphasis on urban, English, middle-class orientations and values were the predominant materials available for instructional use. The survey uncovered a few textbooks and materials, mostly in the form of children's story books, written in English, which did deal specifically with the lives and experiences of Chicano children. However, an examination of books such as *Two Pesos for Catalina* (1962), and *Rosa* (1963) revealed that many of these books typically portrayed Mexican American children in romantic, negative or stereotypical ways. Mexican American children were seen as passive, sombrero wearing, often rural dwellers, beset by poverty, with little hope for a better tomorrow.

The survey occasionally uncovered a book or two written in Spanish but frequently published for use in Spain, Mexico or Latin America. Typically, these imported books contained middle-class value orientations in addition to linguistic characteristics that were largely unknown to Spanish-speaking children in New Mexico. An example of this was the Laidlaw reading series *Por El Mundo Del Cuento y La Aventura* (1961), which was developed for Puerto Rican children and because of a lack of any other material, was widely used in early bilingual programs in New Mexico. The New Mexico Chicano child reading these books encountered such words as *chiringa*, *granja*, *bola*, and *regalo* in place of more familiar and known words—*papalote*, *rancho*, *pelota* and *presente*.

Other textbooks written in Spanish were found but many of these turned out to be translations of English materials dealing with English cultural referents such as the landing of the Pilgrims on Plymouth Rock, Columbus' discovery of America, and the life of George Washington. In a few bilingual programs the Walt Disney Golden book series in out-of-New Mexico Spanish translations were supplements to many of the above mentioned texts. For obvious reasons, bilingual teachers in New Mexico found it difficult to utilize Spanish materials having a total English culture base with the New Mexico Chicano children.

The survey of existing materials contains some important lessons for textbook and materials production writers. Perhaps the most important learning that can be gained from such a study involves the understanding that textbooks and other forms of materials are vehicles for value transmission. As value carriers, textbooks have the power to transmit important messages, either explicit or implicit, which influence a child's view of himself and his world.

In an interesting study of a rural village in midwestern United States, Johnson (1980) argued that textbooks and other forms of material culture (including charts, flags, bulletin boards, calendars, maps and other visual symbols) are not passive but powerful and active mechanisms for socialization and enculturation. In the culturally diverse community of Deerfield, Johnson found that the material culture in classrooms was generally oriented towards national, rather than local traditions, identities and particularistic sociocultural orientations. Local traditions, holidays and celebrations in Deerfield were ignored in favor of national events like Washington's birthday, Independence Day and St. Valentine's Day.

Johnson's study points to the need for instructional materials to have local flavor and to be particularized to the needs of specific communities. For too long, Spanish-speaking children have been exposed to cultural and language models that are far removed from their own life and experience. Local models of language and culture, including the myths, traditions, stories, legends and experiences of New Mexico Chicano children are critical in the development of Spanish literacy materials. These materials, locally developed with culturally important perspectives can serve as a starting point for children's ultimate explorations of new worlds and more universal realms of meaning.

Sociolinguistic Aspects of Literacy

The bilingual materials development institute, upon which this paper is based, had as one of its principal purposes, the development of instructional materials that were designed to promote *Spanish* oracy and literacy skills in New Mexico Chicano children. The task of developing these literacy materials, including language development, and reading and writing activities, brought out a number of psycholinguistic, sociolinguistic, cultural, and linguistic issues that need to be recognized by individuals involved in the preparation of instructional reading (or other type) materials in vernacular or minority languages or dialects. Although the psycholinguistic, cultural and linguistic aspects of the reading process are implicit in the description section of the *Tierra de Encanto* reading series in the last part of this paper, it is the *sociolinguistic aspect* that will be highlighted here.

The sociolinguistic and historical factors that have helped determine the patterns of language use in Spanish-speaking communities of New Mexico illustrate some of the difficulties involved in promoting Spanish literacy through the use of vernacular materials. The Spanish language in New Mexico has grown up in a climate of severe geographic isolation, far removed from direct contact with the rest of the Spanish-speaking world. The peculiar conditions under which it developed has led many linguistic observers to classify New Mexico Spanish as a distinct dialect "representing . . . a more or less direct reflex of the speech of sixteenth century conquistadores" (Ornstein, 1972, p. 70). As a consequence, the bulk of linguistic research on New Mexico Spanish has concerned itself with its allegedly static and archaic nature. Thus archaic linguistic forms such as *truje* for *traje* (I brought), *muncho* for *mucho* (many or much), and *ansina* for *asi* (thus) and other similar dialectical pecularities have been investigated extensively.

In addition to its unique archaisms, a second aspect of New Mexico Spanish that has provoked public controversy is the tendency of its speakers to borrow and incorporate English word forms into their speaking repertoires. As early as 1911, Aurelio Espinosa, the most prominent scholar of New Mexico Spanish, made numerous observations regarding the mixing of English and Spanish forms (Espinosa, 1911). To illustrate, New Mexico speakers will frequently and quite unconsciously convert the English word truck into *troca*, lunch into *lonche*, sink into *sinque*, as well as many others. Since academic purists have always identified this language-mixture behavior as corruption and not as language accommodating itself to change, the Spanish of the Southwest has frequently been pejoratively referred to as Spanglish, Tex-Mex, pocho Spanish, or simply as nonstandard. Judgments of New Mexico Spanish have been no less harsh.

For example, Eyring, a university professor, expressed his concern for the lack of purity in New Mexico Spanish in 1937:

> A residue of frontier Spanish of the sixteenth, seventeenth and eighteenth centuries, slightly enriched by expressions filtering in from Mexico, has been officially allowed to vegetate and be preserved by oral transmission for almost a hundred years. . . . Spanish must be raised to the professional and cultural level and officially banned on the illiterate level if the interests of the Spanish-speaking people are to be protected. (p. 24)

Kercheville, a University of New Mexico professor, was likewise concerned with restoring and modernizing New Mexico Spanish in 1938:

> However, it is an observable fact that Spanish is rapidly, if not disappearing, certainly degenerating in New Mexico. It is being mixed with English, and in some respects is becoming almost a dialect. . . . The process has not gone too far yet but that it can be stopped, and the Spanish language saved for posterity as a great vital second language in New Mexico. But the work of reparation and insistence on correct Spanish must be done now (p. 46).

The statements of Professors Kercheville and Eyring reveal some important sociolinguistic distinctions that academics and lay people began to make between the variety of Spanish that New Mexicans commonly spoke, and the Spanish they were being asked to learn. The New Mexico variety of Spanish was of course acquired primarily within the intimacy of the family and community and was preserved largely through oral transmission. Commonly identified as *Castellano*, the superimposed variety of Spanish was perhaps best learned through the formality of school instruction and was transmitted and preserved via textbooks and an extensive written literature. While popular usage of the people standardized New Mexico Spanish, the prestigious *Academia* was the official conservatory agency of *Castellano*.

In the minds of most people, the New Mexico dialect represented local habit and custom, just as *Castellano* represented "great tradition" and high culture. Within the academic community, New Mexico Spanish was seen as inadequate for handling high conceptual thought as well as having a limited capacity for managing the new and scientific. To be sure, New Mexico Spanish was useful in getting an individual a job with the local political party; but on the other hand, *Castellano* Spanish could assist one in securing an ambassadorship in Latin America. As these attitudes became socially entrenched, it was relatively common for both academicians and lay people to evaluate *Castellano* as pure, unadulterated, and correct, while New Mexico Spanish was perceived as an achronistic, parochial, and in need of purification and modernization.

Continually judged against a Castillian standard, New Mexico Spanish suffered in status and prestige. The subordinate status of New Mexico Spanish was further reinforced as public school educators urged speakers of the local dialect to emulate a variety of Spanish that was both distinct and different. Not surprisingly, public denigration has strongly influenced the native Spanish-speaker's own self-awareness about the quality and even the legitimacy of their local vernacular. Put in the position of evaluating their local vernacular, Spanish-speaking Americans with traditional roots in New Mexico are typically apologetic, defensive, and will frequently say something to the effect: "*pero nostros hablamos Español muy mal*" (but we speak Spanish very poorly).

The issue of the local dialect versus a standard variety is very much alive today, particularly among bilingual educators who are being called to make pedagogical decisions as to what variety of Spanish should be taught to New Mexico children. Educators who defend the New Mexico dialect argue that the child brings with him a legitimate and fully developed language system that the school must accept and utilize educationally. Opponents of dialect teaching argue that New Mexico Spanish lacks prestige and prevents its speakers from interacting with the larger Spanish-speaking world. Judging from the highly polarized debates of this issue at a recent bilingual education conference, the question will not reach academic resolution easily.

To summarize briefly, the Spanish language has been maintained in New Mexico for over 350 years, largely through geographic and cultural isolation. For the most part, the Spanish language in New Mexico has existed primarily on a primordial, ethnicity and tradition-bound basis rather than on an ideological or nationalistic one. Although invested with official and legal status in 1912, the Spanish language in New Mexico has failed to achieve widespread social recognition and equality.

In spite of its well-recognized oral tradition, there is some evidence which suggests that an extensive Spanish literacy base was beginning to emerge in the early twentieth century only to be curtailed abruptly by the rapid and widespread introduction and institutionalization of English in the public schools. This literacy base was primarily tied to functional uses of literacy such as letter writing, official records, reading religious literature or Spanish newspapers. However, as a result of the rapid intrusion of English, an extensive written literature in the form of *belles lettres*, novels, dramas and poetry was not allowed to flourish.

Although there is a rich and extensive standard literacy tradition in Spanish on a world-wide basis, the specific but narrow literacy tradition in New Mexico has important implications for the development of Spanish literacy and instructional materials designed to promote it. On one level, the idea of motivating and encouraging children in New Mexico to become literate in Spanish in order to attain access to the "great traditions" represented by standard world culture is exciting and appropriate. On the other hand, instructional materials that rely exclusively on enticing children into Spanish literacy by holding up a Spanish culture as a model and as a prime motivator, run the risk of alienating individuals from their own cherished local and particularistic values, language and traditions. For some New Mexico Spanish-speaking children, a standard literacy tradition that is remote in time and space and that represents alien values and traditions, can be just as irrelevant and meaningless as the standard, middle-class-Anglo culture frequently is. Undoubtedly then, the issue is a delicate one and must be handled sensitively by bilingual materials production specialists.

In a similar vein, the problem of convincing children, teachers, parents and communities of the value and importance of Spanish literacy is a difficult one. It is difficult to argue the value of literacy, given the fact that outside of a few public signs and with the exception of some private literacy within specific families, there does not appear to be an objective, functional need for Spanish literacy within many New Mexico communities. For bilingual teachers, the problem of helping children move into literacy when there are few meaningful uses for Spanish literacy in the community is a complex one.

It is clear then that in addition to the technical problems involved in materials development, larger social issues must be recognized by individuals working in this "relevant" materials area. These individuals must see as a primary task the elevation of the status of the local dialect—in this case the Spanish dialect—by accepting, promoting and creating new values and new appreciation of this language as a legitimate vehicle for literacy.

The Tierra De Encanto Literacy Materials

The primary problem to be researched in order to construct a theoretical framework or rationale for developing culturally relevant materials was, of course, the users of such materials. The study of the *nature of children* and the *nature of the reading process* that eventually yielded such a rationale was based mainly on findings from four broad areas: psychology, sociology, culture and language. The topic of "children" in general yielded some universal abstractions that guided our thinking in constructing the materials. However, the topic of "children" looked at the real target children that concerned us—the Chicano children of New Mexico living with other children in the state. The content, scope and sequence of the reading material took its concrete form from the following fundamental assumptions about children and language.

The children were seen first and foremost as *human beings* with a hierarchy of needs such as those described by Maslow (1962) and Palomares (1972)—physical, physiological, safety, love, self-esteem, and cognitive needs. These basic needs, the particular cultural interests and life aspirations and values of the Chicano culture for simple survival and complex self-actualization, including an emphasis on the special need to act empathetically and compassionately as well as intelligently are all depicted through the cultural content in the stories. For example, in the story "*Vamos a Tu Casa*" the reader learns about different natural animal shelters, but also about a boy who helps a baby bird find its nest because the bird still cannot fly well (Gonzales, 1973).

The children were also seen as *children* and not as adults. The developmental theory of Jean Piaget (Flavell, 1963; Piaget, 1953) guided our thinking here. Play was emphasized throughout the stories because it was seen as the major mechanism of motivation, intelligence, development and life in general (Piaget, 1951). The stage of "children" represented for us a major formative part of a long life span in which the most basic organic, mental, emotional, physical or more generally, psychological structures and functions must be constructed for later use and elaboration in adult life. The stage of "children" was in no way seen as an incomplete entity but at once holistic and integral and at the same time in the process of continuous, constant, and more or less stable transformation. The children were each seen as a total entity or living system self-regulating the influences of its internal and external environment in a manner somewhat qualitatively different from adults. It was learned early enough that children construct reality (that is the precept, the concept, the affect, etc.) differently from that constructed by the adult, and this was highly respected and appreciated (Piaget, 1929, 1930, 1941, 1946, 1954). The developmental process in all its many realms (intellectual, moral, metaphorical, emotional, and physical) was seen as a normal and healthy process. The stage of "children" meant for us the early childhood and elementary school years (pre-operational and concrete-operational stages). In a Piagetian (Piaget, 1952) sense they were seen at this period of their lives as refining some of the already developed cognitive abilities, as in the middle or in transition stages for others, and as developing some new ones. In short, consolidating some structures and functions and beginning the next ones.

The children were seen as constructing sex roles—boys and girls interested in their historical roots, but more so in their everyday lives, and in their dreams of the immediate future. As boys and girls they had already acquired, and would continue to acquire, the roles of male and female in the Chicano culture, with new attempts at avoiding sexism. Both sexes read about some universal, as well as particular boy and girl problems, that they need to solve through the true-to-life or fantasy and role-playing situations in the stories. In the story, "The Weeping Nun" the reader sees the conflict of values in the nun who is dedicated to God on one hand and the feelings of love she has come to acquire for the wounded and hungry soldier whom the convent takes in and cares for. The children also see the consequence of the choice the nun makes in the end (Gonzales, 1973).

Thirdly, the heart of the reading process (Zintz, 1970) and children demanded that we see the children as *language users* (Hymes, 1972). The hearing, speaking, writing and reading activities in the material capitalize on a very familiar New Mexico Spanish dialect very rich in its power to do all that other languages can do as instruments of symbolic thought, communication and expression. As language users, in general, they were viewed as developing *bilingual readers* in particular. Recognizing that the reading process is more than the sum total of what the teacher does, the children also were expected to be highly capable of acquiring the many known and unknown techniques of reading mostly by themselves if the materials at least had high significance and relevance. Traditional and favorite methods of teaching children decoding and comprehension skills were included if there was a logical case for them to be used and not because they had come to be known as somehow intrinsically tried and true methods. Some were *left out entirely*. However, since the children were seen as readers of English and readers of Spanish, the material also offers some innovative reading techniques to be used by the teacher to help the children make connections, separations, and comparisons between the two languages, so that the process of thinking in this case remains synthesized and enriching for each language and not as interfering and confusing the one with the other (Shuy, 1973).

The content of the material assumes a group of biculturally adaptive readers and therefore thinkers who have the capacity to synthesize the two cultures in a healthy and enjoyable manner, and who later can recognize the bicultural context in a metacognitive and social sense for acting in the appropriate manner in particular situations. The material aims as one of its major goals to help the child's growing biculturalism. The reading material also attempts (in the teacher's guides) to help children integrate the reading process with all other areas of development such as science, math, social relations, and the fine arts. Space does not permit us here to write about all the technical considerations in constructing an attractive format for the printed materials so that the reader is invited to pick up the printed material and read it.

The reading material follows a developmental sequence where one level prepares the reader for the next level (Piaget, 1926, 1974). There was developed a general readiness level that included a sensorimotor-perceptual activities section (Frostig, 1964), an introduction to print readiness level, and lastly a language experience approach (Van Allen, 1967) section. The first book, Level I, presumes a knowledge base comprehensive enough for the child to achieve almost total success with his first stories since none of the vocabulary is new, only the different arrangement of it in the stories. The rest of the levels were designed so that the child might experience 70 to 90 percent success with each new level. The teacher is given many ideas to meet any of the new vocabulary in each story. Although the vocabulary is sequenced and highly controlled in the first three levels, the content of the stories remains faithful to Chicano children's interests with the help of large and attractive illustrations. The next three levels (IV, V, and VI) presumed a general sophistication in the reader that could now give more emphasis to independent and creative reading activities. Stories with very high interest and cognitive content such as myths, legends, fables, analogy, mystery, romance, morality and problem-solving themes are emphasized at this developmental level.

The children should be able to recognize that New Mexico Spanish culture achieves its uniqueness from interactions and adaptations with both the Indian and Anglo cultures of New Mexico. The children should find in the stories content that reflects a bilingual-bicultural and often an overlapping multi-cultural psychosocial context. The particular Chicano bicultural secular, religious, ritualistic, ceremonial and celebrative content dealt within the stories include and overlap many times with some of the traditional and modern views of both the Indian and Anglo culture represented in New Mexico. In a sense New Mexico culture is depicted in the stories that belong now to the three main cultures of this state. The theoretical framework for the materials recognized the Chicano children of New Mexico as uniquely diverse but at the same time sharing similar experiences with his non-Chicano peers. The use of the New Mexico Spanish dialect in the reading series could possibly meet the primary home language needs of about 30 percent of the Chicano children. Use of the New Mexico Spanish dialect could also be a very relevant introduction of Spanish as a second language for the other 70 percent of the New Mexico children (both English dominant Chicanos and other non-Chicanos). In this sense the material has relevance for most of the children of New Mexico because much of the linguistic and nonlinguistic information in the content of the stories is common to many of the children of New Mexico, such as piñon picking time, and lighting *luminarias* and *farolitos*. In this sense the reading series was developed essentially for both: those children that are already in the process of being Spanish-English bilinguals, and those who might like to become so with their peers. For the non-Chicano-culture children the case might be a matter of acquiring only the Spanish language labels for concepts already in their culture, which is as much as talking about language extension in general through synonymic elaborations. Or, in other cases, it would be the introduction of both a new concept plus the label. But in many cases the New Mexico Spanish words and concept would already be in the lexicon of the New Mexico Indian or Anglo dialect, such as the words *mesa*, *chile*, *fiesta*, *ristras*, *peso* and *compadre*.

In developing a rationale for the development of culturally relevant New Mexico Spanish literacy materials, the participants of the institute committed themselves first and foremost and as closely as they could to what we thought and believed to be the fundamental culture and dialect of the New Mexico Chicano children. We assumed that having found the reading content more related to their "organic" thinking (Ashton-Warner, 1963, Roach Van Allen, 1967) the process would automatically continue to other types of materials provided either simultaneously or subsequently by the teacher.

The institute's goal, it will be recalled, was twofold: to train personnel in the development of the "bilingual education" concept in general, and to train this same personnel in the development of concrete Spanish literacy materials that could be more relevant for the Chicano children—especially those in a Spanish-English bilingual classroom. The institute's investigations of the most recent literature on children from a psychological, sociological, cultural, and linguistic perspective formed a strong base for what many of the participants already felt to be so intuitively. The success of such beliefs and findings are presently being tested as the reading series is tried with the children of New Mexico. The general result, however, at the end of the materials development institute was, in retrospect, a success for many of the participants, for it had already been a time of intellectual reflection and a creative process plus great satisfaction in perhaps finally contributing in a very real way to the modern curriculum content for bilingual children.

Concluding Comments

The intent of this paper was to discuss a number of issues related to the development of literacy materials for a specific Spanish-speaking group, the Chicano children of New Mexico. Emphasis was given to reaffirming the educational principle that literacy materials, and instructional materials in general, should be localized and particularized to the needs and characteristics of specific cultural and linguistic communities. Historically, Spanish-speaking children have been expected to benefit from literacy materials that are based on models of language and culture that are far removed from their own experiences and background. Hopefully, the ideas in this paper will be useful to others involved in developing culturally and linguistically appropriate literacy materials for other particular groups or communities.

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ED212141

LANGUAGE THROUGH SCIENCE: AN INTEGRATIVE MODEL

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INTRODUCTION

In recent decades science education has shifted to a process approach to learning as opposed to the mastery of scientific principles through the memorization of facts. This current orientation in science education is due in large measure to the influence of Montessori and Piaget whose thinking has influenced pedagogy indirectly to incorporate the utilization of inquiry through observation, experimentation and discovery of generalizations (Agnello, 1980). This inductive method of learning has also been popular in second or foreign language education as illustrated by the use of various types of drills in the audio-lingual method, developed over two decades ago.

Today more and more schools apply problem-solving at different levels with concrete materials coming from the cultural environment of the students involved. Rather than providing the student with the generalization or scientific principle and then illustrating it through an experiment, contemporary pedagogy presents the student with a problem and guides the student in scientific procedures to arrive at a solution to this problem. As a result, the student develops his cognitive operations and discovery procedures by coming up with a generalization on his own.

Bilingual Education and Science

The rapidity with which bilingual education was in part mandated has resulted in a number of lacunae or gaps in its application vis-à-vis content areas, especially math and science. A survey of classroom practices in bilingual education projects in the El Paso/Las Cruces border area of the Southwest revealed that matching content materials to the special needs of bilingual-bicultural education constitutes a dilemma (Ornstein and Penfield, forthcoming). Apparently, this problem is even more acute in science education where ethnic factors sometimes play a subtle and partially negative role in classroom practices. Too much of science instruction in bilingual education is still based on the memorization of "facts" with only minimal attention to inquiry processes or the application of scientific principles in any way relevant or useful to the Latino life style. The mainstream, middle-class science materials utilized often allude to remote examples that non-mainstream children can not relate to easily. In the upper grades, where instruction takes place in English and textbooks are also in English, the less

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proficient student of English loses out on important scientific concepts necessary for future courses. Since many Latino minority students fail to receive the sort of exposure to science at an early age that many Anglo, middle-class children receive, their chances of advancement in science-related occupations at advanced levels are lessened.

Hernandez (1971) has noted the need for curricular changes for Mexican American students; in particular, the use of materials dealing with the Indo-Hispanic cultural heritage as part of the curriculum. The curriculum no doubt partially explains the low participation of Mexican Americans in science-oriented fields of study in higher education. A national study conducted in 1972 reflected the fact that only 3.1 percent of those Mexican Americans in higher education were in the fields of engineering, physical science or business, while 85 percent were in liberal arts and sciences (Lopez, Madrid-Barela and Macias, 1976). Slightly higher figures existed at the University of Texas at El Paso in 1975 where 13.9 percent of the Spanish-surnamed students were enrolled in the College of Science and 7.7 percent in the College of Engineering (Muhs, Popp, and Patterson, 1979).

At least two main factors are involved in bilingual-bicultural education as far as science education is concerned. The first of these is the interplay between language and concept formation. Since many children are exposed to science in English at a level above their language competence, they never understand the scientific concepts involved. They certainly do not acquire the skills of inquiry or creative problem-solving that can effectively equip them to function in a highly technological society such as the United States, either at a practical or a technical level.

A second factor is that mainstream science materials often are based on "remote" examples that minority children can not relate to easily. In the upper grades, both the scientific concepts and the English language structures necessary to verbalize and understand the concepts become very complex. Thus, students in the upper-elementary grades who have a low level of mastery of English, lose out on important scientific concepts and inquiry processes that are fundamental for more advanced science work.

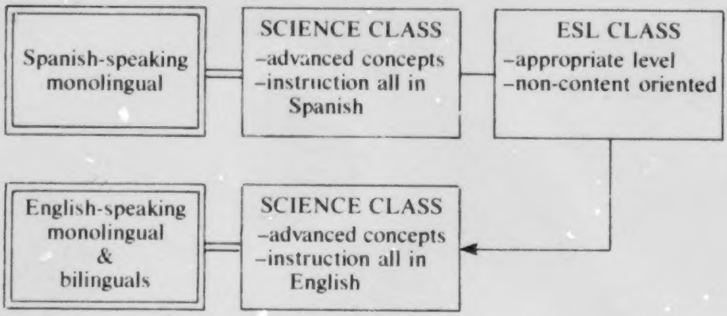
In line with both factors mentioned above, this paper suggests that an inquiry approach to science instruction, with the proper hands-on activities, could improve the bilingual-bicultural program by: (1) focusing more on cognitive operations and problem solving; (2) improving language skill in both languages; and (3) providing better opportunities for bilinguals to participate in advanced science studies. Exactly how these three goals might be achieved in bilingual education is suggested later in this paper by a problem-solving model for integrating science and language. To some extent, this model could also be applied to other content areas such as social studies or math. However, these areas are beyond the scope of this paper.

Models for Integrating Science and Language

We can distinguish at least three existing alternative curriculum models for integrating science and language. Although these are basically hypothetical models, imagined for the sake of discussion and in order to contrast with our own integrative model, we feel that each model exists to some extent in some schools in the U.S. or Canada. For the sake of discussion, we will refer to these models as follows: the *transfer* model, the *balanced* *bilingual* model, and the *ESL* model. Our own model will be referred to as the *integrative* model.

FIGURE 1

THE TRANSFER MODEL


Spanish-speaking monolingual
SCIENCE CLASS
-advanced concepts
-instruction all in Spanish
ESL CLASS
-appropriate level
-non-content oriented
English-speaking monolingual & bilinguals
SCIENCE CLASS
-advanced concepts
-instruction all in English

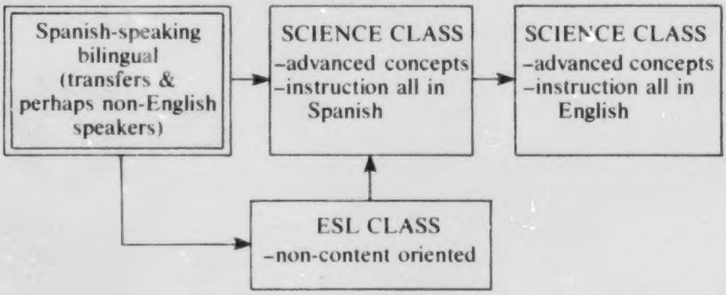
The transfer model is entirely designed for non-English-speaking students who enter fourth, fifth or sixth grades with only competence in Spanish (Figure 1). The focus of this model is to provide fairly advanced science concepts in Spanish until the students are able to function somewhat in English when they can subsequently be transferred into English-speaking science instruction classrooms. Thus, the transfer model is basically a temporary procedure to deal with non-English speakers or incipient bilinguals. As the diagram illustrates, the ESL instruction in the transfer model is not coordinated with any particular content area, such as, science or math although the teacher may draw on these areas occasionally in teaching. The transfer model may often attempt to maintain content continuity in the curriculum by teaching the same concepts for each grade (4th, 5th, or 6th) but in different languages for different populations of students. Thus, a student is hypothetically easily moved from science instruction in Spanish in fourth grade, to science instruction in English in fifth grade, once the necessary language skills have been acquired in English. In short, the transfer model is really a temporary way of dealing with bilingualism and one which seeks to integrate the non-English-speaking population into the mainstream English courses as soon as feasible.

The balanced bilingual model seeks to devote equal time to science in both English and Spanish through separate classes. This model is no doubt fairly uncommon in practice in the United States, although it may be utilized in Canada. The order in which these two classes occur is ultimately the key, since the notion is that a Spanish-speaking dominant bilingual student should first learn and understand the scientific concept in his dominant language and then later be introduced to the same material in English. This model obviously seeks to develop English language skills in science class while not sacrificing the acquisition of the scientific concept first in the dominant language (Figure 2).

The balanced bilingual model is designed for Spanish-speaking students in all three upper grade levels (4th-6th) with primary focus on learning the

FIGURE 2

THE BALANCED BILINGUAL MODEL

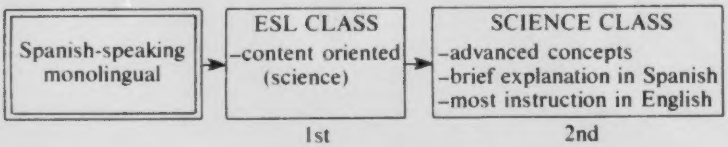

Spanish-speaking bilingual (transfers & perhaps non-English speakers)
SCIENCE CLASS
-advanced concepts
-instruction all in Spanish
SCIENCE CLASS
-advanced concepts
-instruction all in English
ESL CLASS
-non-content oriented

inquiry processes and concepts through Spanish, along with reinforcement of the same processes or concepts and improvement of English competence later in the day through science instruction in English. ESL classes are designed as optional but required for less proficient English speakers and perhaps transfers, if needed.

The third hypothetical model, the ESL model, is aimed at helping the less proficient English speaker or non-English speaker to receive science education in English, but only after proper preparation in ESL content (Figure 3). The ESL model is currently applied in an experimental program funded under Title VII at Roosevelt School, El Paso, Texas (Apodaca, 1981). This model requires a great deal of coordination between ESL teachers and science teachers, using a minimum of Spanish to explain the basic concept and a maximum of English in the classroom. As Figure 3 reflects, a typical daily schedule for each grade level (4th-6th) of Spanish-dominant students includes a science-oriented ESL class followed by a science class predominantly in English. The same routine is followed for social studies and math.

FIGURE 3

THE ESL MODEL

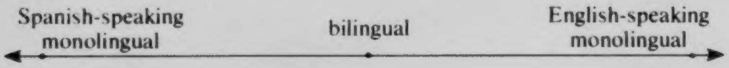

Spanish-speaking monolingual
ESL CLASS
-content oriented (science)
SCIENCE CLASS
-advanced concepts
-brief explanation in Spanish
-most instruction in English
1st
2nd

Through coordination between the ESL and science instructors, the ESL model seeks to first give the students the English structures and vocabulary necessary for the science class which follows. The science class is taught briefly in Spanish and then in more detail in English. The concepts introduced in science class in the ESL model are the same concepts introduced in English to monolingual/dominant-English speakers. In short, the ESL model utilizes the notion of ESL in the content areas to prepare students for a science lesson conducted primarily in English. It is obvious that this model would have some difficulty in encouraging inquiry development in Spanish, since the focus of the model is functioning in English, for the most part.

An Integrative Problem-Solving Model

In the hypothetical models discussed previously, we can note some similarities as well as some problems for an inquiry approach to teaching science. First, none of the hypothetical models have included similar components for the monolingual or proficient English speakers. There is no suggestion for treating Spanish as a Second Language for English speakers as there is for English as a Second Language (ESL) for Spanish-dominant speakers. Secondly, the inquiry approach would be problematic in most models since it is based on a great deal of verbalization on the part of the child, often at a linguistically complex level. At least for the advanced scientific concepts, students who are less proficient or perhaps non-English speakers would not be able to function in English through a truly inquiry-approach as many of the models have suggested. However, they might possibly function at a less advanced or beginning science level through the use of English. In fact, as we are suggesting in our *integrative* model, scientific inquiry at less advanced stages can be used to teach a second language, whether this be Spanish or English, while the dominant language can be used to teach science at the more advanced inquiry stages or the stage appropriate to the level of the child involved. Our model spells out specifically how language skill in the dominant language and the second language might be synchronized and mutually supportive with science instruction in a way that is relevant to Latino culture.

In order to be adaptable to a variety of sociolinguistic situations represented in bilingual educational programs throughout the United States, the integrative model that we propose first assumes three hypothetical, categorical points along a language proficiency continuum:



At one end of the continuum are the monolingual Spanish speakers; at the other end are the monolingual English speakers; and in the middle are the bilinguals who are either knowledgeable in both Spanish and English or who need work in both formal Spanish and formal English. These are, of course, simply imaginary distinctions since in real life a community, especially El Paso, Texas, or a classroom, certainly may have children who range from monolingual Spanish speakers to dominant Spanish speakers to balanced bilinguals to dominant English speakers with some knowledge of Spanish to monolingual English speakers (Ornstein, Valdes-Fallis, Dubois, 1975). In reality, school systems, just as classrooms, often have the same array, but for the sake of our model we are going to imagine three main groups of students in grades 4-6: (1) the dominant Spanish speaker who needs ESL; (2) the balanced bilingual who has fluency in certain domains in English and Spanish, can read in both languages, but may have greater vocabulary and structural language development in certain content areas for one language versus another; and (3) the dominant English speaker who may or may not know a little Spanish and is in a program of Spanish-as-a-Second Language (SSL) or Spanish-as-a-Foreign Language. It will be assumed that bilinguals who may not be able to read in both languages, i.e., who are not balanced, would be placed in the first group described.

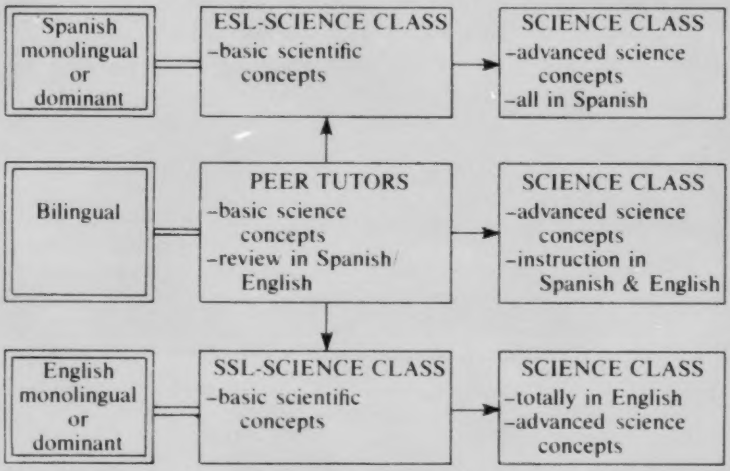
The three categories mentioned above are typical of three separate classes, or more realistically in some cases, of one linguistically heterogeneous classroom. Our model could function within a classroom situation in which the three groups would be dealt with separately or within an entire school setting in which each group would constitute a different class and be handled separately. The latter is, of course, ideal.

Although the three categories of students distinguished theoretically above may be quite different linguistically, we can assume that they are all homogeneous in their need for scientific concepts and that all need development in problem-solving and inquiry if they are to be adequately prepared for a technologically oriented world, such as the United States. At the same time, it might also be assumed that each group may have different levels of preparation and background in scientific inquiry processes. Because of the linguistic situation, it is often the case that monolingual Spanish speakers or dominant Spanish speakers lack the knowledge of technical scientific terms in Spanish. Therefore, it might be necessary to emphasize these terms in the science classes taught in the dominant language.

Figure 4 illustrates the sequencing to be followed with the three groups mentioned previously so that a full integration of second language classes and science classes can be achieved, given the linguistic nature of the students involved.

FIGURE 4

THE INTEGRATIVE MODEL


Spanish monolingual or dominant
ESL-SCIENCE CLASS
-basic scientific concepts
SCIENCE CLASS
-advanced science concepts
-all in Spanish
Bilingual
PEER TUTORS
-basic science concepts
-review in Spanish/English
SCIENCE CLASS
-advanced science concepts
-instruction in Spanish & English
English monolingual or dominant
SSL-SCIENCE CLASS
-basic scientific concepts
SCIENCE CLASS
-totally in English
-advanced science concepts

The integrative model includes several unique aspects. First, the integration of bilinguals in both second language learning settings is suggested to facilitate interpersonal communicative language acquisition. Thus bilinguals act as peer tutors to second language learners and at the same time receive review in concepts as well as terms used in both Spanish and English for these concepts. This is in keeping with research on language acquisition among children, which reveals that actual communication as opposed to formal language instruction is more beneficial for children below puberty (grades 4-6).

The integrative model is basically utilizing the immersion language learning concept that focuses on actual language communication and use in content areas as opposed to language instruction in noncontent oriented areas. The integration of two very different sets of students proposed by our model provides a sort of immersion quality to the SSL and ESL language program while at the same time facilitating the review of simple scientific concepts, e.g., color terms, terms for shapes, texture, size, temperature differences, direction, movement, taste and length.

A second unique aspect of the integrative model is the use of science-oriented materials to teach the second language. This notion is a fairly uncommon one, although a few bilingual educators such as Frank Sutman, Professor of Science Education and Director of MERIT Center at Temple University, have proposed it. A more detailed monograph dealing with this concept, to be published jointly by Frank Sutman and Virginia F. Allen, entitled "Teaching English Language Through Science in Multicultural Settings" is in process (see National Science Teachers Association, April 1981).

Using science to teach ESL/SSL is a very sensible notion that offers pedagogues an opportunity to kill two birds with one stone. In the first place, as discussed previously, the learning strategies of the child are furthered through manipulation and internalization processes both in language learning in natural situations and in cognitive operations as defined by Piaget (1971), Santos (1980), and Montessori (1976). A scientific inquiry approach to learning science offers this opportunity for both language learning and inquiry growth. The use of hands-on materials that children can manipulate, observe, and comment about provides the basis for sensory-motor learning of language and science.

The third unique aspect of our proposed model, and one that varies from the practice of most bilingual programs, is the actual directions in which the model proceeds. Some models seek only to help the Spanish dominant or monolingual Spanish-speaking child and eventually function totally in English. These models are essentially unidirectional and their focus is essentially on the non-English-speaking student. It is interesting to note that our integrative model seeks to be truly bidirectional and bilingual in that we are not only concerned with providing opportunities for ESL through science but also SSL through science. This is in keeping with El Paso Public School policy where children receive one class per day in SSL (if English dominant) or ESL (if Spanish dominant) in grades 4-6.

In many models Spanish-dominant students are prepared in ESL essentially to join science classes instructed in English, and all too often this means they join English dominant or monolingual English-speaking peers. This situation can be problematic and psychologically damaging for the less-proficient English speaker who is always somewhat behind his peers because of language differences. We can imagine this especially to be the case with an inquiry approach to science, since this approach involves problem-solving through verbalization. The ESL model, for example, involves preparing students in ESL classes to understand the structures and terminology they will encounter later in a science class taught mostly in English. The integrative model is quite different in this respect. It attempts to ensure acquisition of the scientific concepts through the dominant language, thus avoiding the problem posed by other models in which language becomes a barrier to scientific understanding.

In contrast to the ESL model, the integrative model first builds on linguistic structures through basic scientific concepts in the second language. Complex scientific concepts are dealt with in the student's dominant language at the same time. Thus our model is directed at teaching a second language, either English or Spanish, through fundamental knowledge of science—rather than through complicated concepts. Our goal is to teach ESL/SSL *through* science not to teach ESL *for* science. On the other hand, science classes focusing on more advanced concepts and inquiry processes are instructed in the dominant language to assure maximal acquisition by each population of students involved. Since the inquiry approach requires a variety of different linguistic structures, such as the ability to ask questions, make statements, understand more complex directions, and make generalizations, our model tries to ensure a competent grasp of linguistic complexities before introducing advanced scientific concepts.

In addition, the integrative model is broader in scope than the hypothetical models discussed previously in that it attempts to deal with a variety of different populations and communities through bidirectionality. In communities such as El Paso, where the sociolinguistic situation is extremely complex and where the knowledge of both English and Spanish is useful, if not necessary, to all populations, it is necessary to have a broad and encompassing model that can be adapted to a wide variety of different linguistic and ethnic groups.

It might be noted that the integrative model could equally be applied to other content areas: math, social studies, etc. We have chosen science for this paper because we feel this content area, more than the others, offers a unique opportunity for matching concrete materials and visual aids with language structures. Second language instruction depends heavily upon direct use of pictures and other visual aids for teaching specific language structures. Math and social studies involve concepts that are not as easily related through pictures or visual aids that match specific linguistic structures. For example, the present perfect structure in English—not commonly used in Spanish—might easily be learned through active experiments involving change, e.g., "How *has* the plant *changed*?" "It *has grown* one inch."

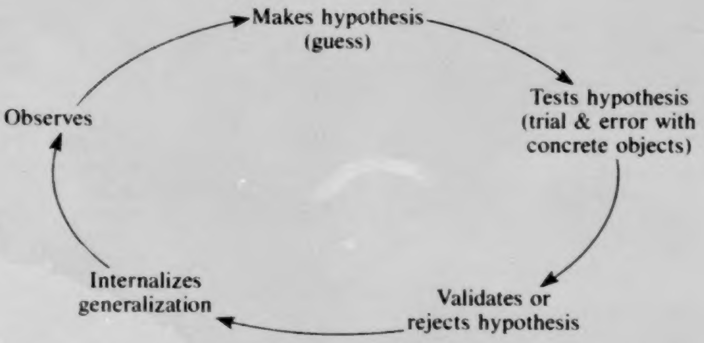
On the other hand, science tends to focus on specific linguistic structures and vocabulary. This means that not all language skills can be covered through science. There are definitely limitations as the analysis of a variety of necessary structures and vocabulary items by the authors has revealed. Still, science does offer a good opportunity to understand and learn how to use these skills through concrete manipulation and verbalization.

Hands-on Materials for an Integrative Model

The notion of using science to teach a second language through the appropriate hands-on materials is in line with practical and theoretical findings of a variety of educational leaders whose impact continues to be felt in numerous sectors of school practice. Jan Amos Comenius, a sixteenth century Czech humanist lamented the abstractness of schooling in general and advocated pictorial and other means in language instruction to counteract this. James Asher (1966, 1969) and Elkins, Kalivoda, and Morain (1972) are less well-known but both have proposed a multisensory approach to language learning, termed the Total Physical Response Method. Maria Montessori established networks of schools dedicated to active participation by the child and manipulation of concrete, relevant objects simultaneously with verbalization. All of these great thinkers share in a dynamic view of learning for the child, whether scientific concepts, mathematical concepts, or language are involved. Figure 5 illustrates this dynamic view of learning. This view goes hand in hand with the inquiry processes to be acquired in the science classroom.

FIGURE 5

DYNAMIC VIEW OF LEARNING



It is obvious that the hands-on materials necessary to stimulate the above process of learning are crucial. Hands-on materials must not be viewed as "cute" gimmicks or tricks to make learning more enjoyable. They are necessary primes in a dynamic approach to learning. Each of the scholars previously mentioned provides clues for the development of hands-on materials for a bilingual science classroom.

Montessori's notion that a child internalize concepts through the senses, led to the development of materials that were adapted specifically to the child's world as opposed to the adult world. The development of hands-on materials for bilingual-bicultural science classes must also adapt to the ethnic/cultural background of students in order to facilitate maximum internalization of concepts. For example, to develop the inquiry process of classification for Mexican-American children in the Southwest (and Anglo

Children, too to some extent) the use of deciduous trees and/or leaves might be less relevant than desert fauna or cacti. The development of linguistic terms, such as "hot" or "spicy" would probably involve different examples of food items for Mexican heritage students than for most Anglo heritage students.

In this connection, it must be emphasized at this very juncture that too many colleagues over-simplify the matter of terminology, assuming that appropriate Spanish equivalents are whatever may be found in any standard school dictionary. In fact there are some nineteen national varieties of Spanish, as well as regional dialects in each nation of the Hispanic world, including the United States. Puerto Rican, Cuban and Chicano Spanish reflect sharp differences of lexical and phonological type with much less divergence in grammar and syntax. A discussion of the sociolinguistic nature of U.S. varieties of Spanish may be found in Ornstein (1981). In brief, bilingual teachers must accommodate sociolinguistically to the respective national/regional variety, be it Spanish or any other language, so that whether this be done informally or otherwise, "dialect" items of word or phrase type can be readily supplied, insuring that the younger learners, particularly, can readily grasp meanings and avoid embarrassing confusion. Unfortunately, bilingual teacher training still tends to deal with the linguistic component in a cavalier fashion, emphasizing abstract linguistic principles rather than basing such components on the problems encountered as a result of language variation in actual domains of living, of which the school is without equivocation, one of the most crucial. One of the few glossaries of science terminology was prepared by Ortiz and Davila (1979) as a course project within the framework of the Bilingual Teacher Training Program at Texas A. and I. University, Kingsville.

Piaget's notion (1976) of concrete and abstract operations suggests that abstract operations must come by way of concrete operation of manipulated objects that are most relevant culturally and geographically to the children involved. This specifically relates to basic concepts that he suggested, such as classification, seriation, number, space, quantification, and measurement. Piaget's notion that conservation is fundamental to understanding of any other properties of number is crucial to the scientific concept of quantifying observations. The child not only has to be able to measure using different systems or tools of measurement but he also has to understand the concept that the same quantity may have different orders, shapes, and sizes. Experiments using concrete application of a physical change effected on a quantity by the child, along with a change back to the original state, would help the child to internalize the fundamental concepts of conservation and reversability. A variety of hands-on materials can be developed using everyday objects, such as water in different size glasses, pennies in a row, or candy in a row, to provide the child with an opportunity to manipulate and verbalize simultaneously.

Through many different types of experimentation, Asher, Elikins and Associates (1966) discovered the importance of motor response in improving listening skills in second-language learning. They found that both adults and children had longer retention and quicker acquisition of words and structures in a foreign/second language when they acted out commands given by the instructor in that language. Thus, motor-oriented responses and perhaps movements in general can greatly increase listening skills in a second language (Cf. Ornstein, 1975 for a review of these and related innovations). Apparently, the verbalization and actual motor movements together can further second-language acquisition in science learning.

Analysis of Available Hands-on Materials

There are a wide number of materials that are inquiry or process-oriented for science teaching; however, there are very few that are available for bilingual educational models such as the one we have proposed. Even bilingual science materials available (*Sciencias Rey* by Luis Rey) are not written for Southwest-Spanish speakers. Thus even those materials that are written for bilingual classrooms may not use vocabulary terms appropriate to the populations involved. Consequently, it might be wiser for teachers to use hands-on materials written in English for teacher-use and develop equivalents in Spanish.

One set of materials which is process-oriented and organized into 105 modules for teaching science might best work for this adaptation, especially since the materials are primarily for teachers. *Science: A Process Approach II* (American Association for the Advancement of Science, 1976) is a module approach that gets progressively more complex and cumulative in scientific understanding. Although only the first few K modules are translated into Spanish, it would probably not take a great deal of effort to adapt further modules to a Spanish-speaking classroom. A great deal of the method involved is guided by the teacher verbally.

An analysis of the above materials reveals that the following basic scientific concepts are dealt with at various levels:

1. Observation
2. Space/time relationships: shapes, directions, motions, speed
3. Classification: similarities/differences of objects & events
4. Numbers: ordering, counting, mathematical operations
5. Measurement: using instruments, selecting correct instruments
6. Data interpretation: inferring from diagrams, maps, graphs
7. Variable identification: observing changes, recording them, manipulating changes
8. Making hypotheses
9. Making operational definitions

An analysis of the linguistic structures and vocabulary needed for various modules was carried out by the authors of this paper. This analysis revealed that each module no doubt requires a great variety of structures and terms despite the language involved.

It becomes apparent from an analysis of the entire array of 105 modules that the first set of modules (1-15), which are intended for K, provide excellent material for linguistic development in a second language along with a basic scientific concept. For example, Module 1 focuses on observational skills, specifically the naming and identification of colors. Students are to name and identify all primary colors. This activity would require not only the terms for primary colors, but also the linguistic structures for asking about colors, commenting about objects with colors, and commenting generally about color. Figure 6 illustrates the structures necessary in Spanish and English to do this.

FIGURE 6

What color is this?	*¿De qué color es este?*
It's green.	*Es verde.*
color	color (in agreement)
What color is the top?	*¿De qué color es el trompo?*
It's a red top.	*Es un trompo rojo*
color	art. color (in agreement)

We can see by the examples of linguistic structures necessary that the child learning English must learn two new linguistic concepts: (1) the adjective precedes the noun; and (2) a pronoun is obligatory in the statement. The child learning Spanish must learn at least three linguistic concepts: (1) a pronoun (subject) is optional; (2) adjectives follow the noun; and (3) articles and adjectives must agree with the noun, except for special adjectives like "azul" or "verde."

It is apparent that although Module 1 may have been designed for kindergarten monolinguals or even younger children, it can usefully serve for beginning second-language students (4-6) as well as for introducing scientific concepts. Our integrative model could easily utilize the very basic modules to integrate science and second-language learning. What better way of introducing qualitative concepts than through actual touching, seeing, smelling, or other actions along with verbalization. Often certain terms and their concepts cannot effectively be explained other than through actual experience. Certain qualities in English illustrate this problem:

TASTE—sweet/bitter/sour
DENSITY—hard/soft
TEXTURE—smooth/rough
WEIGHT—heavy/light (not for colors, speed or density)
COLOR—dark/light

Thus, the linguistic restrictions on labelling scientific concepts are defined by the language involved. Much of the confusion from the second language learner's viewpoint can be eliminated by using concrete and explicit objects that define the distinctions of contrasting labels or structures.

In short, the beginning modules of the *Science: A Process Approach II* series require students to identify and name a variety of basic fundamental concepts: numbers, colors, shapes, sizes, textures, temperature, direction/space positions, serial orders, dimensions, measurements, sounds and sequences of events. All of these concepts require basic linguistic notions that can be taught, along with the concepts, to second-language learners using the proper hands-on materials that are culturally relevant and semantically revealing. In fact, Modules 1-17 can be used to teach basic second-language constructs to beginning 4-6 grade students. In regard to the more advanced modules, they do offer some opportunity for language learning but they become increasingly so complex that they are definitely not as easy to adapt for this purpose.

CONCLUSION

This paper has offered a model for integrating science and language in bilingual-bicultural education with the goals of increasing cognitive operations as well as language skills in both languages for a variety of different populations. The integrative model suggests how the broad stages of inquiry can be integrated with language. Finally, this paper suggests ways in which hands-on materials need to be adapted to fit the needs of various ethnic groups and linguistic groups of the proposed integrative model.

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We would like to express our thanks to Mrs. Olga Ligouri; Mrs. Rosita Apodaca, Consultant for Bilingual Education, El Paso Independent Schools; and Mrs. Kathy Grajeda, Bilingual Instructor, Roosevelt School, El Paso for their help in preparing this paper. Responsibility for the contents of the paper, however, rests with the authors.

ED212142

MUSIC FOR THE BILINGUAL CLASSROOM: AN INTERDISCIPLINARY APPROACH

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INTRODUCTION

Promoting the incorporation of music into the bilingual curriculum develops as a result of experiencing, observing, and documenting the positive reactions of students and teachers to music in the classroom. As the guitar is being tuned or the record player is warming up, an air of expectancy, of unity, and of excitement envelops and enhances the classroom climate.

As songs are being introduced in a second language to speakers of another language, it is not long before each student is involved in an authentic cultural experience. In addition, students effortlessly and naturally develop such linguistic competencies as pronunciation, intonation, vocabulary, and comprehension. For example, when a song is taught in Spanish to a linguistically-mixed student body, the native-Spanish-speakers display delight and pride in being able to assist the English-only students with mastery of the song's melody, pronunciation, and meaning. The English-speakers, on the other hand, eagerly strive for perfection of their newly acquired skills in Spanish. In addition to learning a second language and becoming familiar with a new mode of cultural experession, the students begin to perceive the positive values of bilingualism as well as to elevate the status of the non-Anglo culture.

Similarly, a song can be introduced to the same students in English thus affording the Spanish-dominant pupils an opportunity to develop linguistic competencies in their second language, to work closely with their English-speaking peers in a tutorial situation, and to develop a feeling for the Anglo culture through personal involvement.

Music and Ethnicity

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Dr. Ricardo Trimillos (1975:32), ethnomusicologist at the University of Hawaii, reflects on the great potential of the interface between ethnomusicology and education in the following statements:

> One of ethnomusicology's primary purposes in education is to educate the individual THROUGH music as well as TO music. For example, learning an ancient HULA involves an understanding of music, dance, language, geography, and social values. It presents a mode of thinking, a style of moving, and a way of hearing . . . The study and presentation of ethnic musics in the schools points up the existence of alternative

and valid cultural expressions, which are of critical importance to the American of an ethnic minority background. A polycultural approach to music can reinforce positively his identity as a "hyphenated American." Negative marginality thus becomes positive biculturality; it allows him to experience and explore another part of his own heritage without feeling that he is weakening or rejecting the American orientation.

Importantly too, culturally-relevant music (i.e., traditional and folk music representative of a specific ethnic population) can be integrated into the school curriculum in order to make the total educational program more compatible with the cultures and languages of minority children. As Cardenas and Cardenas (1977:1) indicate:

> An instructional program developed for a white, Anglo Saxon, English-speaking, middle-class school population cannot be and is not adequate for a non-white, non-Anglo Saxon, non-English-speaking, or non-middle-class population. To reverse the pattern of failure for non-typical children, it is necessary that the instructional program and the characteristics of the learner be compatible.

Others have also recognized the need for culturally-oriented curriculum materials that are useful and stimulating in both the cognitive and affective domains. Responding to this awareness, Franklin and Nicholson (1978) in their study of 157 randomly selected Black students reported statistically significant differences in achievement according to: (1) the type of music the students were exposed to (culturally-oriented or not), (2) the attitudes of the teachers toward the culturally-oriented music program, and (3) the entry attitudes of the students themselves toward music representative of their culture. They concluded that positive attitudes toward the home culture coupled with a culturally-based curriculum can inspire greater pupil achievement.

In an excellent and informative publication B. Lee Cooper (1979), Vice-President for Academic Affairs of Newberry College, develops two innovative instructional approaches utilizing popular music as a resource for teaching contemporary Black history: (1) the use of biographies of popular music artists, and (2) the analysis of social themes through song lyrics. Cooper laments that although Black music always has been at the vanguard of the community's feelings and consciousness, the lyrics of Black artists have rarely been introduced into the academic setting. He believes that Black musical artists' contributions to the rich oral Afro-American tradition cannot be overlooked any longer.

The power of music as an enculturator contributing to positive cultural identity, self-esteem, and group cohesiveness is examined by Johnston (1976) in research concerning the role of Eskimo and Indian music vis-à-vis Alaskan native social adjustment. Addressing educators with his well-developed rationale, Johnston advocates for native music in the classroom at every grade level. He believes that continued research into the social and psychological implications of native musical behavior can eventually help solve intercultural and intracultural problems in a rapidly changing pluralistic society.

Music and the School Curriculum

The versatility of music as a vehicle for achieving educational success in academic disciplines such as reading, foreign language, mathematics, and language arts has also been documented in the literature. (Arrellano and Diaper, 1979; Donlan, 1974; Lloyd, 1978; Crow, 1974; Jolly, 1975; Carderelli, 1979). In addition, interdisciplinary uses of music are often proposed to enhance and unify the entire academic curriculum (Mulligan, 1975; Williams, 1977).

One important curricular area, reading, has been given considerable attention by educational practitioners and researchers. In her state of the art review, Sullivan (1979) found three prevalent types of publications pertaining to the teaching of reading through music.: (1) testimonials concerned with motivation and the affective domain, (2) research on the relationship between reading and musical abilities, and (3) research on the effects of music instruction on the acquisition of reading skills. Sullivan (1979:8) concludes that despite inconclusive evidence and an insufficient number of research investigations documenting gains in the affective domain to support the use of music instruction for purposes of improving language reading attainment," . . . it would appear that if one likes the music/reading approach, that is, using songs in teaching reading skills, it can be successfully utilized as part of the instructional program for reading."

In noting the many ways that music can benefit the cirriculum, music's appeal and usefulness with special populations (e.g., mentally retarded, preschoolers, emotionally disturbed) should not be overlooked (Groves and Groves, 1980; Simons, 1978; Andress, 1980). In one interesting case study by Deutsch and Parks (1978) for example, music is utilized as a reinforcer to increase appropriate conversational speech. The subject of their research was a moderately mentally retarded 14-year-old boy with severe emotional problems. Rewarding Glen with the opportunity to hear continuous music as long as he demonstrated appropriate behavior and conversational dialogue proved to be a successful motivator. After eighteen sessions his use of "conversation-like" sentences increased significantly. The researchers suggest that music be considered an alternative primary reinforcer with autistic and mentally-ill patients.

Objectives for Music in the Spanish-English Bilingual Classroom

In synthesis, music has been incorporated into the curriculum for many reasons including the following: (1) to enhance learning in the content areas; (2) to promote positive self-identities among minority populations; (3) to stimulate and reinforce appropriate behavior with special education pupils; (4) to foster positive intercultural attitudes among ethnically diverse pupils; and (5) to deepen one's understanding and appreciation of a particular cultural group's history, values, customs, and mores.

The above documented uses of music have contributed to the emergence and formulation of the following set of objectives for use within Spanish-English bilingual-bicultural programs:

1. To enhance the self-concept of Spanish-speaking students
2. To foster a cohesive group identity and promote cultural pride among Hispanic students

3. To foster positive intercultural attitudes among students of diverse linguistic and ethic backgrounds
4. To provide enriching experiences in oral language development in both Spanish and English
5. To strengthen the phonic, semantic and syntactic cueing systems in both languages in order to promote literacy skills
6. To supplement and enrich content areas such as art and social studies.

Methodology for Teaching a Song in a Foreign Language

Prior to incorporating music into the curriculum and hence being able to reap the benefits of the above-stated objectives, one should strive for mastery of a comfortable method for introducing and teaching songs in a foreign language. A teacher who is not proficient in the target language can rely on a parent volunteer, consultant, student, or recording. Once the method itself is internalized it can be passed along to the one who will ultimately be responsible for teaching the song.

The successful teaching of a song in a language not yet mastered by the students greatly depends upon the teacher's technique and method as well as his or her patience and awareness. Teachers' awareness of their students' abilities, interests, and mastery levels will enhance and facilitate the completion of the task. The time it takes to pass through the four phases of the recommended methodology will vary according to the complexity of the song, to the students' experiential backgrounds, to the time alloted daily to this activity, and to the students' attention spans. The following suggested methodology can, of course, be adapted for compatibility between the teacher's own style of teaching and the pupils' styles of learning.

I. *Motivation*. Before introducing the song, orient the students by briefly discussing the song's content, origin, central theme, historical relevance, or any other information available to you. Follow your orientation by playing a recording or singing the song to the class. As the melody becomes increasingly familiar encourage humming or singing along.

II. *Participation*. To encourage student involvement, begin by teaching the most repetitive parts of the song such as the chorus or continually repeated words or phrases. This phase familiarizes the student with the verses and creates early sense of accomplishment.

III. *Analysis*. Once the students are completely familiar with the tune and with the chorus or other refrains, move on to teaching the correct pronunciation and meaning of each line in the song. It is important to translate in a meaningful way as opposed to a word by word literal translation. The song analysis phase can be accomplished in the following manner:

1. Decide in advance which are the key words in each line. If the students have a personal copy of the lyrics, have them underline the key words and write the translation on the top of each one. Repeat the difficult words several times for correct pronunciation.
2. Following the mastery of the key words, move on to longer phrases. This can be accomplished more easily using a technique called backward buildup.
3. As each line is mastered, sing the song through from the beginning for practice and reinforcement until the stanza is completed. Teach sub-

sequent stanzas following the satisfactory performance of each previous one.

IV. *Performance*. After completing all phases of the lesson, sing frequently. It is often fun to sing together as the day begins, while waiting in line for the lunch bell to ring, or at day's end. On a given day small groups of children may want to perform for the class, or perhaps an individual may prefer to sing a solo. The main points to remember are: (1) singing is an enjoyable class activity, and (2) the internalization of a song serves as a catalyst for many related learning activities in other content areas.

As a repertoire of songs builds, your students might enjoy performing for various audiences; these might include other classes at your school or at a neighboring one, parents, nursing home residents, hospitalized children, community service club members and others.

Following is an example of the methodology applied to a popular Spanish song, *De colores*.

I. *Motivation*. *De colores* means "of colors." It is a Spanish folk song to which a myriad of lyrics have been added over the years. *De colores* has become the theme song of the Cursillo movement, a Catholic experience of rededication to the church which began in Spain in 1949. There are now Cursillo centers all over the world. The history of this movement is available in a publication entitled *The Origins and Development of Cursillo* by Ivan Rohloff. It can be purchased from the National Cursillo Center, Box 210226, Dallas, Texas 75211.

The song as sung in Hispanic communities today praises Nature for its living colors, rainbows, birds, and other delightful animals. Everything of beauty in the world has color!

II. *Participation*. Encourage students to sing along each time the phrase "*de colores*" is sung. Introduce the refrain "*Y por eso los grandes amores de muchos colores me gustan a mí*" since this is repeated several times throughout the song.

III. *Analysis*.

1. After choosing the key vocabulary, introduce these words and have students make notations on their papers as in the following example:

countrysides springtime
De colores, de colores se visten los campos en la primavera.
birds from afar
De colores, de colores son los pajaritos que vienen de fuera.
rainbow shine
De colores, de colores es el arco iris que vemos lucir . . .

For this particular song it might also be a good idea to point out the cultural element of how Spanish-speakers and English-speakers differ in their perceptions of animal sounds.

rooster cockadoodledoo
Canta el gallo, canta el gallo con el quiri, quiri, quiri, quiri, qui.
hen cluck, cluck
La gallina, la gallina con el cara, cara, cara, cara, ca.
chickadees peep, peep, peep
Los polluelos, los polluelos con su pío, pío, pío, pío, pí . . .

2. To teach the pronunciation of the longer phrases such as "*se visten los*

campos en la primavera", begin with smaller partitions starting at the end of the phrase. This backward buildup would be introduced thus: *"en la primavera" . . . "los campos en la primavera" . . . "se visten los campos en la primavera"*.

In the event of a particularly difficult phrase such as *"los pajaritos que vienen de fuera"* you might repeat the difficult words several times prior to attempting the entire phrase. The techniques of backward buildup and frontward buildup can be used as an added reinforcement. *"los pajaritos . . . los pajaritos . . . los pajaritos . . . "los pajaritos que vienen" . . . "los pajaritos que vienen de fuera" . . . "de fuera" . . . "que vienen de fuera" . . . "los pajaritos que vienen de fuera"*.

IV. *Performance*. After teaching the song in both English and Spanish, there are several alternative ways to encourage a group sing-along. One idea is to divide the class in two and have each group simultaneously sing their version in either Spanish or English. Languages can be switched after the first stanza so that the students singing in Spanish will then switch into English and visa versa. Another fun idea is to have the girls sing the first stanza alone in Spanish or English followed by the boys singing the second stanza in the other language. By alternating languages students are given practice in both languages and are encouraged to develop fluency and control in each one.

INTERDISCIPLINARY LEARNING ACTIVITIES

The introduction of interdisciplinary learning activities should follow the learning of the song in the student's second language so he or she will be already familiar with the phonetics (pronunciation), syntax (grammatical structures), and semantics (meaning) of the lyrics. Following are several suggested activities designed to achieve varied objectives in the areas of oral language development, reading, listening skills, grammar skills, social studies, art, and creative writing. If the song is in the student's native language, these activities will also be helpful since they are designed to promote growth in oral language, new knowledge of grammatical relationships and patterns, spelling, cultural information, and creativity in general.

Oral Language Development Activities

After having taught the students specific vocabulary words, allow these to be substituted into a song where the syntax might still be preserved although the meaning is somewhat altered. The following activity is adapted from Jacovetti (1965).

Cielito Lindo
Spanish oral language development

De la sierra morena . . . mis padres y mis tíos . . .
Tomás y su hermana
unas orejas grandes . . . vienen bajando
una niña bonita
mi amigo Miguel
un buen conocido . . . viene bajando
un buen conocido

corriendo y brincando, cielito lindo, de contrabando.
saltando y jugando

Ay, ay, ay, ay, canta y no . . .bailes
grites
te quejes
te vayas . . .

English oral language development:

Down from the ...... mountain top
zoo
market
school

my .... dearest
darling
love
sweetheart

There come those . . . pretty dark eyes
tremendous ears
great big feet

A . . . pair of pretty dark eyes
bushel
dozen

my dearest .... stealthily coming toward . . . me
sneakily us
rapidly you
slowly him
noisily her

Instruct students to search the lyrics for a particular element. These might include such things as: words of emotion, taste, touch, sight, smell, sounds; specific parts of speech; verbs in a particular tense; synonyms or antonyms. The use of dictionaries and glossaries should be encouraged to develop the students' self-help and resource skills.

Ask specific questions requiring thought and oral expression:

1. Who is singing to whom?
2. What is the tone or mood of the song?
3. Why do you think this song was written?
4. What cultural elements are in it?
5. How does this song make you feel?

Reading Activities

These reading activities will be based on the song *Feelings*.

The cloze technique (deletion of a phoneme or word) can be employed to strengthen the phonic, syntactic, and semantic cueing systems in the following ways:

Phonics. Choose a particular phoneme or pair of phonemes and delete each time these appear in a word. Have the students complete each word. Variations of this activity might include deleting only beginning, ending or medial consonants, blends, or diagraphs according to the chronology of your reading skills sequence.

Example: Delete the phonemes /f/ and /th/

___eelings, no___ing more ___an ___eelings, trying to ___orget my ___eelings of love.

Syntax. Delete words following a key grammatical structure.

Example: Can you find a home for these words?

"than" "to" "of" "on"

Feelings, nothing more ________ feelings, trying ________ forget my feelings ________ love. Teardrops, rolling down ________ my face . . .

Semantics. Delete words in the lyrics that are crucial to the meaning of the song. Instruct students to replace those words with their own words (provided that they make sense syntactically) in order to create a song with a different meaning.

Example: ____________ nothing more than ____________, trying to
____________ my ____________ of ____________.
____________ rolling down on my ____________ . . .

Sight word activities are excellent for helping young readers identify very common words in a context they can understand. In the song *Feelings* there are many sight words that you can ask students to search out and circle in context. These include: than, to, my, of, for, all, it, I, you, come, in, and, girl, have, down.

Similarly, sight words in Spanish can be identified in the Spanish version: *cómo, mis, de, si, yo, que, aquí*.

Purposeful oral reading can be encouraged as questions are asked that will require students to locate specific answers in their texts and read these aloud. For example, the teacher can ask a student to locate the line in the song that tells what the singer is trying to forget. Or perhaps the student will be instructed to locate the information that states what the singer wishes for with respect to his girl friend.

Reading comprehension can be encouraged by asking questions that are inferential or evaluative as opposed to literal. For example, inferential questions requiring students to infer information about the characters in the song might include the following opening phrases . . . Why do you suppose . . . ? Why is it probable or not that . . . ? What do you believe caused . . . ?

Creative Writing Activities

Have students create a story with characters centering around the mood evoked by the song or around the song itself. For example, the song *Brown-Eyed Children of the Sun* evokes the trials of a migrant family struggling to survive as best they can, while the popular romantic tune, *Cuando Calienta el Sol*, evokes a scene of young lovers at the height of their relationship.

Extract poetic phrases and have students explain these in their own words or by using another poetic simile. In *Brown-Eyed Children of the Sun* there are such phrases as:

Your face is *lined and wrinkled* and your age is forty-one.
Your back is bent from picking *like your dying time has come*.
Your *children's eyes are smiling*, their life has just begun . . .

Art Activities

Have students hunt for pictures in magazines that seem to depict scenes from the song. These can be used to illustrate an original story booklet about the song.

Have students draw or paint their interpretations of a specific part in the song that had meaning for them. Others can guess what line or part of the song the artist depicted.

If you are studying the music of a particular nationality or ethnic group, art activities can be included in order to create a bulletin board display or attractive learning center. If you are studying Mexican songs, for example, the students might be motivated to make original "*piñatas*" or "*ojos de Dios*."

Listening activities

Ask students to identify rhyming words.

Ask students to identify beginning sounds of specified words (ending sounds or medial sounds as well).

Ask students to listen for intonation to determine when a question is being asked, or when a statement or negative sentence is being said.

Have students complete phrases, predict outcomes, or substitute synonyms as a listening/speaking activity.

Social Studies Activities

Social studies emcompasses many disciplines including: economics, history, geography, sociology, anthropology, psychology, and philosophy among others. Within a specific discipline, conceptual areas will emerge that are particularly relevant to cross-cultural understandings. Such topics might include: immigration, slavery, poverty, assimilation, acculturation and others.

The following are suggestions for incorporating song into the social studies content area:

Set up a learning center related to the study of a particular region or nation. Have the song or songs on tape for students to listen to. Include as well any film strips you are able to obtain. Relevant books, magazine articles, literature, enyclopedias, and teacher-made materials will all contribute to a colorful and interesting learning center. In addition, the language arts activities suggested earlier can be placed at this center.

Learning centers also provide an excellent opportunity for parental involvement. Involve parents as much as possible in the process of gathering materials for the center. They have a wealth of untapped knowledge and resources that are authentic and valuable to your curriculum. Don't be shy about asking parents to participate!

The study of geography or map skills can be enhanced by a "trip around the world" through music. Each time you introduce a country or continent, enrich the experience with representative songs. Many students' parents have recordings from other nations or would probably offer to tape songs for the class on a cassette.

If you are studying Spanish-speaking nations, here are some representative song titles for which the music is readily available from commercial recording companies specializing in folk music:

Mexico—*La Bamba, La Llorona, Las Mañanitas, Cielito Lindo, La Zandunga*
Puerto Rico—*La Borinqueña, Lamento Borincano, En mi Viejo San Juan*
Cuba—*Cuando Salí de Cuba, Guantanamera*
Dominican Republic—*Quisqueya*
Perú—*La Flor de la Canela*
Colombia—*Guabina Huilense*
Chile— *Yo Vendo unos Ojos Negros, Mi Caballo Blanco*
Venezuela—*Alma Llanera*
Argentina—*El Humahuaqueño, Vidalita*
Bolivia—*Boquita Colorada*

In addition to comparing music between nations, a study of the different types of music within the same nation would be very valuable. This is an effective way to introduce the concept of cultural pluralism. For example, in the United States, cultural pluralism can be introduced through the various musical genres such as: country and western music, soul music, pop, classical, ethnic and others. Exploring diversity within a nation can help to breakdown stereotyped images people often develop about a particular nationality when they believe the entire population to be homogeneous.

Thematic studies can be introduced through the use of song lyrics:

Economic deprivation: Brown-Eyed Children of the Sun; *Corrido de la Miseria; Lamento Borincano*
Historical themes: *Corrido de los Oprimidos*
Lamento Negro
Immigration: *En mi Viejo San Juan*
Brown-Eyed Children of the Sun
Cuando Salí de Cuba
Cross-cultural understandings: Pick a theme such as love, nationalism, humor, poverty, death, or motherhood and study how it is handled in the lyrics of songs from country to country.

The activities suggested are by no means all-inclusive. Their purpose is to stimulate the classroom bilingual teacher, however knowledgeable about music, to exert initiative, develop creativity, expand his or her access to curricular materials, and make the bilingual-bicultural classroom a dynamic, interesting, and culturally-relevant experience for all students.

SELECTED RESOURCES FOR SPANISH/ENGLISH BILINGUAL CLASSROOMS

The following selections include song books, indexes for location purposes, recordings, unique curricular materials in the content areas, classroom guides, and the names and addresses of recording companies that specialize in international folk music.

Lyric Guides and Reference Books

Cancionero Popular Americano. Pan American Union, Washington, D.C.

Chase, Gilbert. *A Guide to the Music of Latin America*. AMS Press: New York, 1972. Library of Congress Call No. REF ML 120 S7 C47

This reference book contains annotated information concerning the music of Latin America in addition to an ample bibliography of resources.

Durán, Gustavo (Transcriber) *Fourteen Traditional Songs from Texas*. Pan American Union, Music Division, Washington, D.C., 1942

Ehret, Walter. *The International Books of Christmas Carols*. Prentice-Hall: Englewood Cliffs, New Jersey, 1963.

Havlice, Patricia Pate. *Popular Song Index*. Scarecrow Press: Metuchen, New Jersey, 1975. Library of Congress Call No. REF ML 128 S3 H4

National Anthems of the American Republics. Pan American Union, Washington, D.C., 1949.

Paz, Elena. *Favorite Spanish Folk Songs: Traditional Songs from Spain and Latin America*. Oak Publishing Co., New York, 1965.

The songs in this book are available in recordings from Folkways Recording Co. 43 W. 61st Street, New York 10023. Telephone: (212) 586-7260.

Peterson C. S. and A. D. Fenton. *Index to Children's Songs*. H. W. Wilson Co.: New York, 1979. Library of Congress Call No. REF ML 128 S3 P48.

This reference book contains a title, first line, and subject index of Spanish and Latin American songs plus information on where to obtain a given song.

Prieto, Mariana. *Play it in Spanish: Spanish Games and Folk Songs for Children*. Day: Pennsylvania, 1973.

Robb, John Donald. *Hispanic Folk Songs of New Mexico*. University of New Mexico Press: Albuquerque, 1954.

________. *Hispanic Folk Music of New Mexico and the Southwest*. University of Oaklahoma Press: Norman, 1980.

Rockwell, Anne. *El Toro Pinto and Other Songs in Spanish*. MacMillan: New Jersey, 1971.

Yurchenco, Henrietta. *A Fiesta of Folk Songs from Spain and Latin America*. Putnam: New Jersey, 1967.

Curricular Resources for Classroom Use

Badias, Bertha et al. *Cantando y Aprendiendo*. Curriculum Adaptation Network for Bilingual/Bicultural Education: Bronx, N.Y. and the Northeast Regional Adaptation Center; also available from DACBE, Austin, Tx., March 1974. ED 108 499.

The illustrated teacher's songbook contains 18 songs and games to be used with the SCDC (Spanish Curriculum Development Center) publications and other materials. The objectives are designed to develop children's listening and comprehension skills, music appreciation, and rhythmic expression.

Canyon Records: 4143 North 16th Street, Phoenix, Arizona 85016.
Specializing in songs and music of North and South American Indians including native tribes of Mexico, Chile, Venezuela, Perú, and Brazil.

Folkways Records: 43 W. 61st Street, New York, New York 10023.
Specializing in international folk music for children and adults.

Forming an Estudiantina and Symbols of Music Notation. Dissemination and Assessment Center for Bilingual Education: 7703 North Lamar, Austin, Texas 78752.
Bilingual teacher's guide for music instruction at all levels. Includes words, music, and instrumentation for beginning singing groups; music and notation; vocabulary; and costume sketches.

G. Ricordi and Company: Paseo de la Reforma 481-A, Mexico 5, D.F. Mexico.
Specializing in musical scores in Spanish.

Guardarrama, Eduardo. *Un Sueño Musical*. National Dissemination and Assessment Center for Bilingual Education: Fall River, Massachusetts, 1978. ED 177 908
Spanish children's reader for grades 1-3 in a bilingual setting. Tells about the cultural contributions of Indians, Spaniards, and Blacks to Puerto Rican Music.

Jacovetti, Raymond. *Teacher's Manual for Escuchar y Cantar*. Holt, Rinehart, and Winston: New York, 1965.
This manual provides teachers with the lyrics and scores of thirty popular tunes in Spanish. Each song is followed by a series of suggested activities to help students with language patterns and grammatical structures. Recordings are also available.

Joan Baez Sings De Colores. DACBE: Austin, Texas.
This is a 30-minute cassette tape which also includes a number of poems and vignettes written by DACBE staff. Attractive posters also available.

Neil A. Kjos Music Co.: 4382 Jutland Drive, San Diego, California 92117.
Specializing in recordings in Spanish.

Mills, Alvin and Josefa P. Mills (Editors and Arrangers) *Christmas Songs: Canciones de Navidad*. Available from ARRC Educational Sales Co. Box 14525, Long Beach, California 90803.
Bilingual Christmas songs in Spanish and English to enrich the musical experiences of beginning singers. Arranged from Spanish folklore material.

________. *Canciones Folkóricas Infantiles de España*.
Fourteen bilingual musical poems available on record or cassette.

Perkins, Carol. *Songs by Carol Perkins*. Caper Records: 6100 Cherrylawn Circle, Austin, Texas 78723.
A series of original lyrics and recordings designed to help young children learn English or Spanish through music and kinesthetic movement.

Santos, Sheryl. *Cancionero Bilingüe*. East Texas State University, Bilingual Education Project, Commerce, Texas 75428.
Contains the lyrics of fifty popular Latin American songs as well as several popular bilingual songs from the United States. Available with a cassette tape.

Something Educational. Box 3476 Mc Allen, Texas 78501.
This company carries the following musical curricular resources: *Mate-*

máticas Musical; Mexican Ethnic Music Kit; Folkways Series of music from Latin America; and *Texas-Mexican Border Music*.

Soy, Rosa. *Bilingual Education Through Music*. Master's Thesis, Kean College, N.J. 1975. ED 141 473.

In addition to a very informative and thorough review of the literature, this publication provides a series of language arts readiness activities utilizing the music and the lyrics of traditional Cuban writers such as José Martí.

Vela, Irma Saldívar. *¡Bailes a Colores!* Available from American Universal Artforms Corporation. Box 4574, Austin, Texas 78765.

This is a simplified color-keyed system for use in teaching the steps of five dances popular in the United States and Mexico. It comes with a record, step chart, cassette, workbook, mini-manual, and map of origins.

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ED212143

ACABA: AN ALTERNATIVE FOR UNDERACHIEVING CHICANO YOUTH

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STATEMENT OF THE PROBLEM

Research on a national level, statewide, and in Santa Barbara, indicates that school systems are generally not responsive to the educational needs of Chicano students. Programs designed to help Chicano students have ignored cultural differences (except for language), and traditionally, have offered middle-class Anglo curricula, which have been adjusted for the Chicano in rather superficial ways. Concern for the Chicano pupil's education must involve the development of other alternatives within the system, which utilize home language and culture as the basic foundation for learning. There is a tremendous need to develop a type of curriculum that will stimulate a student from within, and also include his culture—a program that can develop pride in the individual and in his heritage.

In a White House Conference on Youth Report (1971), the Education Advisory Task Force Subcommittee challenged American educators to design new curriculum models, stating

> The primary goal of education should be self-actualizing of all individuals served, not preparation of individuals to fit existing social slots which are determined by economic consideration . . . the focus must always be on the student as a person rather than on the content as a subject.

This report and others have long recognized that students should help design programs that are developed to meet their individual needs and competancies. with emphasis on treating students as individuals and recognizing their academic, cultural and personal assets.

Project ACABA uses confluent education as its theoretical and functional base and places a primary emphasis upon the individuality of the student, including his culture and language. Confluent education as applied in Project Acaba may nurture personal growth, thereby providing opportunities for expression and realization of personal potential to relate to other human beings, including those who come from different cultures. The enhancement of cultural awareness is also a desired outcome for each student in the program. Understanding oneself and gaining insight regarding other individuals expands our perception and hopefully will increase our acceptance of others.

Briefly stated, Project Acaba will provide improved humanistic methodology for project students and teachers and may increase the self-actualizing process of individuals (Brown et al., 1976; Brown, 1975; Weinstein and Patini, 1970).

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CONFLUENT EDUCATION

It is the underlying assumption of the writer that a confluent approach to teaching, which was implemented in Project ACABA, provides choices and alternatives for the students. Such a confluent approach utilizes both the cognitive and affective areas of the educative process and places an emphasis on awareness of self and the immediate environment. Through the use of techniques and processes designed under the confluent education umbrella, students in Project ACABA are provided instruments to search for their own identities, learn the skills necessary to rebuilt damaged self-concepts, to allow them the freedom to make their own choices thereby allowing them to experience competence and improved self-worth.

Lynne O. Cantlay (1975) states that there is no one technique or method that *is* confluent teaching. What is often called confluent teaching is a teacher *who is and practices being confluent*. The confluent teacher is aware of his/her mind, body and feelings and is in charge of these aspects rather than having any one of these parts in control. His/her understanding of him/herself allows the individual further insight into others. It is this awareness and taking responsibility for his/her actions that makes the person confluent.

According to George I. Brown (1975), it involves combining thinking with feelings so that both benefit. Thinking is sometimes called the cognitive domain. Feelings and emotions fall into the affective domain. Confluent education seeks to integrate these two domains so that they emerge to the extent that they both lose their boundaries and result in a more holistic or "together" behavior on the part of the student. Instead of having emotions clash or conflict with intellectual activity, we try to have both work in a harmonious relationship for the ultimate welfare and productivity of the learner.

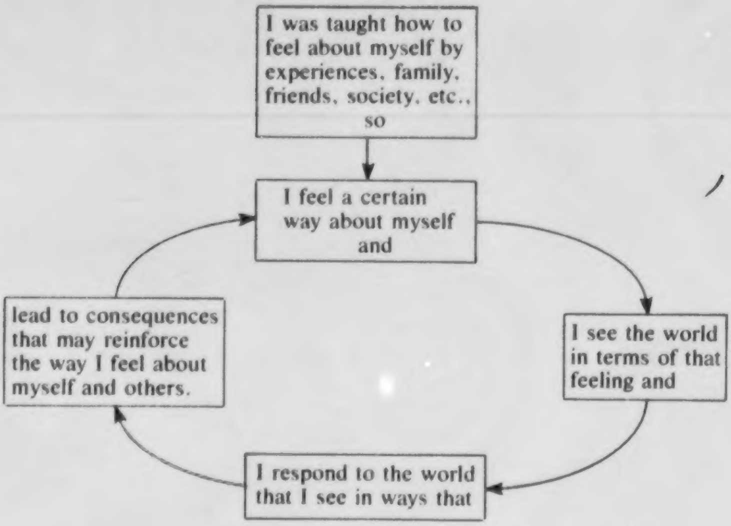
Review of the literature that makes reference to humanistic education provides a broader definition for confluent education (Yeomans, 1973). Humanistic psychology applied to education has created a new field, Humanistic Education. The personalizing of educational experience takes two basic forms for humanistic educators: educating for self-knowledge and education based on student concerns and learning processes. Confluent education embraces the field of humanistic education.

Gerald Weinstein and Mario Fantini (1970) diagram the cycle of experience that we go through and define the process that the author will adopt in the implementation of confluent education, specifically the self-awareness unit in Project ACABA.

Weinstein and Fantini say that on the basis of our unique experience, we draw a great many conclusions about who we are (self-concept) and how we relate to other people, ideas, and things (our view of the world and how it operates). We tend to seek out situations that reinforce and validate our experience. If we cannot choose the new encounter, we tend to abstract, interpret, ignore, and reject parts of the new situation in an effort to achieve a consistency with what we already know, or more precisely, what we already feel to be true. Figure 1 illustrates this cycle of experience.

The cycle is automatic and self-perpetuating. The challenge for educators is to introduce new experience that can alter "how I feel about myself" if that feeling is negative or reinforces failure and restricted behavior choices. If "how I feel about myself" is neutral or positive, we must introduce

FIGURE 1
CYCLE OF EXPERIENCE.


I was taught how to feel about myself by experiences, family, friends, society, etc., so
I feel a certain way about myself and
I see the world in terms of that feeling and
I respond to the world that I see in ways that
lead to consequences that may reinforce the way I feel about myself and others.

experience that supports and reinforces this self-concept. Above all, we must understand that "how I feel about myself" is the filter through which all experience must pass and that unless we devote our attention to improving and supporting positive self-concepts in our students, we are severely limiting our effectiveness as educators. Carl Rogers (1961) states,

> As I have observed individuals who appear to have made important strides toward psychological health, I believe they may be thought of as moving toward an implicit goal—that of becoming a fully functioning person.
>
> I find such a person to be sensitively open to all of his experience—sensitive to what is going on in his environment, sensitive to other individuals with whom he is in relationship, and sensitive perhaps most of all to the feelings, reactions and emergent meanings which he discovers in himself. The fear of some aspects of his own experience continues to diminish, so that more and more of his life is available to him.

Earl C. Kelley (1947), in his discussion of the healthy functioning self, briefly describes how the individual sees himself. "This is indeed the critical point, because it is what the person sees that is enabling or disabling. The critical matter is not so much what you are, but what you think you are. When we see ourselves as inadequate, we lose our 'can-ness.' There becomes less and less that we can do." Kelley says that negative self-concepts can be improved. He further states that through contact with facilitating persons, individuals have been reopened and selves have been helped to function well.

Arthur W. Combs (1960) states that an adequate person must have a rich background and an arsenal of "psychological tools" at his disposal, available when he needs them. This availability seems to depend on two factors: (1) the individual's discovery of personal meaning and (2) the satisfaction of need:

> Learning, if it is to be effective, must produce some changes in the behavior of the learner. To accomplish this there must also be a sufficient discovery of personal meaning of these facts so that the individual will act on his information when the appropriate time and place occur.

According to Lynne O. Cantlay (1975), in a study of students in a ninth grade remedial math class in which she used a confluent education approach,

> Statistically, there were some significant findings indicating that a confluent approach did improve academic self-concept more than the traditional approach.
>
> There was a clear indication that many of the students in the experimental classroom definitely improved their own feelings of academic self worth.

Conceptions of self are not cold, hard facts. They are deep personal meanings, beliefs, values, attitudes, and feelings about one's self. Unfortunately, learning regarding self is excluded from the traditional curricula of the schools. If, however, the nature and development of the self are as important as the preceding authorities and others imply, the ACABA model, through the implementation of confluent education processes and strategies, will serve as a catalyst for change and will be the vehicle for bringing about a more humanistic educational system, one which truly meets the needs of the individual student.

The Purpose of the Study

The purpose of this study was to design an educational program and to evaluate the outcomes of that program within the regular junior high school curriculum. The program was designed to meet better the needs of those Chicano students whose behavior deviates from the norm, often violating school standards, as exhibited by: (1) below average academic achievement, (2) excessive absenteeism, (3) unacceptable overt behavior (lack of respect for authority, fighting, classroom disturbance, etc.), and (4) low self-concept.

Research Hypotheses and Questions

The research hypotheses in this study were:

H1—Students involved in Project ACABA (experimental group) will indicate greater academic achievement gains than students not in the program (control group) as evidenced by 1st and 2nd semester grades.

H2—Students in Project ACABA will show improved attendance greater than those students not in the program, for two semesters.

H3—Students in Project ACABA will show less incidence of disruptive behavior than those students not in the project, as determined by citizenship grades for two semesters.

H4—Students in Project ACABA will show an improved self-concept, in covergent and divergent subareas, greater than students not in the project, as measured by the Sears Test of Self-concept.

In addition to these hypotheses the following questions were investigated:

Q1—Is the birthplace variable (Mexico or U.S.) a significant factor in the accomplishment of the stated hypotheses?

Q2—Was the school dropout or transfer rate greater for project students?

Q3—Is a high self-concept a significant variable in the attainment of academic grades?

Description of the Study

Program ACABA was implemented at Santa Barbara Junior High School, in Santa Barbara, California. All social classes and ability levels are represented in the student body of approximately 1,135 students. The ethnic composition of the school reflects an ethnic population of 6 percent black, 38 percent Chicano, 52 percent white and 4 percent other students. The school is located on the eastside of Santa Barbara or the Chicano part of town. In a recent desegregation study conducted in the district (1980), Santa Barbara Junior High was identified as in danger of becoming segregated. Other data indicate that Santa Barbara Junior High School has the highest suspension rate for misbehavior of students, the highest absentee rate and the lowest math and reading scores in the Santa Barbara High School District, which has four junior high schools. Santa Barbara Junior High School also draws students from the Montecito area, which is considered to be an exclusive, high income, White, residential community, therefore both extremes are heavily represented.

The staff including teachers, counselors and administrators were asked to select students whom they believed would profit from the program. Approximately 140, high priority or dropout prone 7th and 8th grade students were initially identified as having the necessary criteria for placement in the program. The following criteria was used to identify the students: (1) below average academic achievement, (2) irregular attendance evidenced by excessive absence, tardiness and/or truancy, (3) deviant or negative behavior (poor citizenship) and (4) negative or low self-concept. In addition to meeting at least three of the four variables the students also had to be of Mexican descent. Students having severe emotional or mental handicaps or who were identified as special education students were not included.

A total group of one hundred students was then chosen and using a table of randon selection was divided into two groups of fifty, an experimental group and a control group. It is recognized that some of the selection criteria correlate highly with one another, therefore the students in both groups generally rank low on the various scales of achievement, attendance, discipline and self-concept, when compared to the total school population.

The Curriculum

A general description of the curriculum that was developed for students participating in program ACABA will be provided in this section. A more specific description of the curriculum is being developed under a separate title, *A Confluent Approach for Improving the Self-Concept of Chicano Stu-*

dents in Secondary Schools, for use by school systems working with similar populations.

Program Goal

It was generally understood by the teacher and the program coordinator that the goal of the program was to assist students to help themselves by utilizing a program approach that is different from those programs traditionally implemented throughout the school system: a program that emphasizes knowing about "yourself," and what makes you act out positive and negative behavior, a program that teaches you about your own culture, its problems and its people, a program that involves students in all discussions and decisions regarding them, always in non-threatening ways, and that uses community resources such as Chicano leaders and Chicano professionals to serve as adult models.

Creative and innovative techniques and processes that help students "open up" were designed and implemented. Whenever possible, classroom activities were organized around real-life situations that students could relate to, and that offered an opportunity to share some of their own personal experiences. Individual differences in the student's personal make up, such as personal interests, motivation, language and aptitude, were accommodated.

Individual, small group, and large group assignments, written, oral, sometimes musical and various creative approaches, were developed in order to provide a more interesting environment to encourage more student participation.

A "confluent" approach was always the desired emphasis that sometimes emerged consciously and hopefully, unconsciously. Being aware of what we as teachers and students were doing was sometimes a struggle, always a challenge, and often cognitive and affective processes naturally flowed together. Students from the university who assisted as tutors and peer counselors were not aware of their confluent make-up but they were selected because of confluent qualities they possessed. They were mostly conscious of students' feelings and generally responded with appropriate behavior, stroking where needed and extinguishing negative behavior where necessary.

Method

Two groups of twenty-five students in the project met daily for one class period for the total year, approximately forty weeks. A confluent approach and a cultural awareness unit were added to the foundation program that included a unit on human behavior (self-awareness) and career education.

General Program Objectives

1. To develop a positive self-concept or an improved self-concept.
2. To improve the students' communication skills, verbal and non verbal.
3. To improve the students' appreciation for his school and education in general.
4. To acquire social survival skills so that he may participate more effectively in school and in other social settings.
5. To acquire an appreciation for improved school attendance.

Objectives for the Cultural Awareness Unit

1. To acquire a historical and cultural knowledge of Chicanos.
2. To develop or improve pride in his own ethnic and/or cultural heritage.
3. To learn "coping" behaviors or effective strategies for dealing with issues of discrimination.
4. To improve their knowledge of Santa Barbara's Chicano community.
5. To gain an appreciation for and respect for diverse ethnic and cultural groups and individuals.

Whenever possible, classroom learning activities were drawn from the daily living needs of the students, especially as they related to personal experiences in the school, home or community setting. Interpersonal experiences with adults, especially those in authority roles, were often expressed.

As much as possible, classroom activities were organized around broad-based experience units; for example, coping with feelings of anger, prejudice, violence, adult/student relationships or "why do I act the way I do." Individual differences in abilities, interests, motivation and aptitude were therefore accommodated. Many strategies and techniques designed in the university's confluent education program, such as role playing and other creative approaches utilizing music, poetry, paints, slides, and crayons, were often introduced in small and large groups. Group dynamics in the classroom were given a lot of emphasis. The underlying premise for the staff was always that ACABA students needed a basic change in their attitude and they needed to develop improved social skills and competencies.

There was an emphasis on getting the students to accept responsibility for their own actions, and responsibility for helping themselves to learn. Rather than leading and directing, the teacher solicited the student's cooperation in the learning task. The staff, which included the teacher and university students, worked with students individually within the group setting.

There was a continuous fusion of affect and subject matter content, or cognition and affect. Concern and understanding was sought, rather than a "feeling of being sorry for them." Often, time was taken to discuss problems that arose, sometimes between the students and the staff and sometimes between students and other students. Conflicts on campus were discussed in class. Students were provided adequate opportunity and encouraged to talk about their feelings, orally and in writing, regarding many issues, on and off campus. This type of interaction seemed to release any negative feelings that the students may have been holding and created a class environment where learning, both affective and cognitive, could take place.

The unit on *Cultural Awareness* explored Chicano history and culture, problems of discrimination and other social issues that concerned students. This unit began with instruction about Mexican heritage starting with ancient Mexican civilizations and proceeding to modern Chicano history. Speakers were brought in weekly to serve as resource people and speak on different topics. In addition to providing resources, they also served as positive Chicano models who were leaders that, hopefully, the students might want to emulate.

With all classroom activities, students were encouraged to speak openly regarding their concerns. In this unit personal concerns regarding prejudice and discrimination were often voiced and discussed. There was a concentrated effort to develop pride in one's own ethnic and cultural heritage and at the same time to develop a healthy attitude, respect, and appreciation for diverse cultural and racial groups.

Results of the Study

There appeared to be more favorable results indicated in all of the variables for the ACABA group, when compared to the control group; however, one can only make inferences when analyzing the data. The data analysis strongly favors the ACABA group in the area of self-concept (H4). Significant differences, below the .05 percent level, were indicated, including the divergent and convergent sub-areas. The results in hypothesis H1 (achievement), H2 (attendance), and H3 (behavior), were not in the predicted direction: there were no significant differences indicated between the two groups. However, the data do favor the ACABA group and inferences regarding the validity of the program can be made. It appears that participation in the ACABA Project can have some very favorable effects for students.

Other questions addressed seem to indicate that those students involved in the ACABA Project were more apt to stay in school than students not in ACABA who are enrolled in the regular school program. There was little evidence to determine whether the place of birth, born in the United States or in Mexico, has a significant impact on the attainment of the designated variables. The small size of the sample made this assessment difficult.

An affirmative correlation between a positive self-concept and improved academic achievement seems to surface when analyzing the data, however the results were not statistically significant, therefore definite conclusions cannot be made.

Summary

The problematic condition of Chicanos in the educational system has been described in this paper. Project ACABA was designed in order to provide an acceptable alternative within the present educational structure that will help provide Chicano students with a vehicle and support system so that they may improve their self-image and experience academic success in school.

The general thesis of ACABA was that Chicano youth in the experimental group (provided with a confluent/cultural awareness educational program) would improve their academic achievement and attendance and lessen their negative or disruptive behavior. The students in Project ACABA also would improve their self-concept. This study was undertaken to determine if indeed ACABA students would achieve more positive gains than those students who participate in the regular educational program.

Attainment of knowledge for self-awareness, for self-improvement, and finally the development of an intelligent person who can think and feel holistically will be the seed sown by Project ACABA. The author assumes that those students who participated in the program will be able to participate more effectively in the design of their future by making more responsible and meaningful choices, especially in the selection of their educational pursuits.

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ED212144

DATA BANKS REVISITED: THE USE OF INFORMATIONAL SYSTEMS IN A MULTILINGUAL-MULTICULTURAL ENVIRONMENT

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INTRODUCTION

This research paper will focus on the inquiry of bilingual children (Portuguese-English) and monolingual children (Portuguese) as they study a community with which they are unfamiliar. Although the original study was completed in 1971, the use of technology with a bilingual population is still almost non-existent, especially in the domain of research.

The setting for this inquiry was a data bank developed by Bruce Joyce and adapted by this research to provide bilingual and monolingual children with a great deal of information on a community in the United States. Data banks were used for the study because they provided a structure for mapping the course of the children's cognitive behavior as they worked towards problem solutions.

The first part of the study consisted of observing the behavior of the children as they studied human events using the data banks of information on the community. The Kluckhohn Inventory was used to identify value orientations of the children. The second part of the study used an inventory derived from the Kluckhohn model for analyzing differences in the orientations in monolingual and bilingual populations.

The value orientation was found to be dependent upon the child's age and his/her cultural background. The younger children were able to deal with all three orientations and with the time-concept in a more concrete way. The most extreme was the Portuguese sample that believed in lineality and subjugation to nature, as opposed to the American sample and its belief in collaterality and the ability to change nature. The differences in mapping through the use of the data banks with a monolingual and bilingual population did not show themselves in the behavior of children as they studied the community. Neither the questions of the children as they studied the community, nor the themes they employed in describing it were suited to language-cultural background or to the age of the children.

With the use of data banks, several models for research may be explored in bilingual and multi-cultural settings. *Data Banks Revisited* will attempt to reconceptualize the use of technology in a way that future models may be developed for the classroom.

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RELATED THEMES

As retrieval systems are being developed in the educational field, many researchable questions become apparent. Joyce and Joyce state that children's social concepts seem to vary with age, socioeconomic variables and family characteristics. In terms of learning and schooling, however, the effects on instruction have yet to be identified. The research study by Joyce and Joyce states that social science educators are challenged to learn more about social conceptualization and how to increase the role of schooling in improving children's social thought.

Nostrand calls for research in what he terms the "ground of meaning" in which perceptions such as "*resentimientos*" and "individualism" could be better understood. A possible approach to evaluating value orientations is through the Human Relations Area File.

Bruner identifies cultural differences as "structural amplifiers" of motor, sensory and reflective capacities. In terms of education and ethnocentricity, Taba takes the position that the school needs to counteract the inevitable parochialism of socialization in ethnocentricity; yet she also cites, with no solution, that the process of acculturation is usually attended by stress that may vary from a relatively mild anxiety to a severe disintegration.

Studying ten cultures, Gillespie and Allport reported that American college students showed a greater tendency toward privatism and future orientation. DuBois states that four premises dominate America's cognitive view of the universe, (1) the universe is mechanistically conceived, (2) man is its master, (3) men are equal, and (4) men are perfectible.

Neto reports that industrialization in Portugal has changed the perception of social class in relation to the hierarchical structures. Others generally describe the traditional ethic of the "Latin" as a past-oriented subject and that his value orientation is usually subjugated to nature.

In the field of bilingual education, we are now attempting to understand how the study of language may be a vehicle to analyze differences in various cultures. Simões, for example, has approached cultural differences by attempting to use a phenomenological approach in different language settings. Baecher has used cognitive state analysis in "mapping out" prescriptions for bilingual students while Christian has implied that self-concept and bilingualism have direct implications for bilingual literacy. Even McCormack has reviewed the area of independence-interdependence in bilingual linguistic memory and has revitalized the debate of memory and bilingualism.

The literature in the social sciences is vast and complex but basically one theme cuts across most of the research. Media and technology have not been used to acquire similarities and differences across cultural lines. This research project attempted to use technology and existing models to explore value orientations among different cultural groups. In short, differences do exist among cultures but the educational field still has few, if any, applicable models in the social sciences to identify specific orientations of children for further research.

In this construct that societies do have different value orientations, the domains that are identified as the major focus of this study are man's relation to nature and supernature, man's time focus and the modality of man's relation to other men.[1] Within each orientation three basic directions are given. Table 1 illustrates the further subdivisions developed by Kluckhohn and Strodbeck.

In the man-nature orientation the main emphasis is on one's relationship

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[1] It must be noted that the concept of "man" here is used in the generic sense in which it applies to both men and women.

TABLE 1

THREE VALUE ORIENTATIONS AND THE RANGE OF VARIATIONS POSTULATED FOR EACH[*]

Orientation	Postulated Range of Variations		
Man Nature	Subjugation-to Nature	Harmony-with-Nature	Mastery-over-Nature
Time	Past	Present	Future
Relational	Lineality	Collaterality	Individualism

to the forces of nature, how these forces can be controlled through one's force or intellect, or through some power unknown to or uncontrolled by the individual. One may interpret the environment as a sphere in which the forces of nature may overpower, work with, or be controlled by human hand. If a society believes that the forces of nature dominate one's life, such as the Hispanic group cited by Kluckhohn, then we may say that culture is oriented toward *subjugation* to nature; but if a cultural group believes that the natural forces work with the human race, such as the Navaho Indians in the United States or the Chinese or Japanese cultures, than we may state that the orientation is *with* nature. If, however, a society traditionally believes that nature can be conquered, such as the American view reported by Kluckhohn and others, then we may state that the society is oriented toward the conquest of nature.

People live in a time structure in which the lifestyle is influenced by the interpretation of time. This interpretation may affect the society as it reacts to change. Kluckhohn illustrates this thesis by the English and Chinese resistance to change with their past orientation to time; by the Hispanic present orientation toward time and change; and the Anglo theme of future orientation in which change is accepted with less resistance. It is in this realm that society may measure goals, learn how to acquire them and find how long it will take to accomplish them. All human problems involve time, but *how* the time is valued forms different alternatives to problem solving.

Men and women are social beings and they structure their society according to who is going to lead and who is going to do the work. All societies have a social structure that deals with human problems. Whatever structure is given, it puts individuals in a position that is accorded some value. In the individualistic variation, people are perceived as free beings making responsible decisions with the freedom of choice. Collaterality emphasizes groups working with others and accepting the choice of the whole. In this case, leaders are accepted by all and yet the group still has the veto of individual power. Kluckhohn cites the Mormons and the Navahos as examples of this orientation. Other societies are structured on a hierarchical order with the emphasis on social class, important people and power. According to Kluckhohn, in this orientation, societies are apt to be static with each "family" retaining power from one generation to another.

The use of this model for the study of ethnic groups became apparent. It provided the power to investigate specific domains of cultural differences and similarities. With the use of the data bank, many possibilities were foreseen.

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[*] It must be noted that the placement of each subdivision is purely accidental and implies no rank ordering.

The data banks developed by Joyce and Joyce contain 88 major and 629 sub-categories that were taken from the Index to the Human Relations File. This information was available as written material and photographs. Hence, the combination of the data bank system and the Kluckhohn model made it a viable research project to compare cultural differences and similarities.

Exclusions and Limitations of the Study

Anyone groping for some meaningful conceptual framework in cross-cultural research must overcome social and economic variables that may subtly change the direction of the findings. For example, when one talks about values that are directed in a culture, factors such as social class, rural versus urban orientations, and other complex variables must be taken into consideration. Portugal, with basically an agricultural economy and with most of its immigrants coming from the rural areas, presented some problems with relationship to the American and Portuguese-American groups. With one group involved in an agricultural economy, that is, the Portuguese group, and the other two groups belonging to an urbanized industrial setting in Newark, New Jersey, it is assumed that cultural or value orientations are complicated by other socioeconomic variables in the two types of environments. Because of the limitations of the sample size and the immigration factors of the Portuguese coming to the United States, one must assume that the findings of this study are related *only* to the rural Portuguese. To somewhat overcome this limitation, all children from the American and Portuguese-American groups were selected on the basis of their parents' occupation in the unskilled or semi-skilled working class.

Although important for another study, reading levels and I.W. scores were not considered for this study. This decision was made because no scores were available for the Portuguese group. Using a random selection process for all three groups, the possibility of biasing a sample was virtually eliminated. It was also felt that the use of tape recorders for listening purposes eliminated the problem of differences in reading, but not of I.W. variation. These two factors, the use of a random selection and the use of tape recorders, seemed to be the best approach in equalizing all three groups.

The reader must not generalize the Kluckhohn findings for the Portuguese population. Since this study was accomplished (1971), the Berkeley School, basically Chicano scholars, has heavily criticized the Kluckhohn model. For example, Romano talks about what he terms the "dominant scholars" and research that basically implies that Chicanos were "passive" in nature. He continues to state that the Mexican-American community is not homogeneous, and hence findings such as fatalism to assimilation cannot be generalized. Cuéllar's review of the literature also illustrates the limitations of the Kluckhohn model. He shows that if one is not careful in describing the findings, we may interpret the data from a deficient or cultural depreciation model. In short, value orientations *must not* be analyzed from a negative or positive value or from a reference to the dominant culture. Concepts such as subjugation, individualism and future orientation must be studied *in context*. Cultural values are too complex to generalize, and to do so would be a disservice to any particular culture.

Design and Procedures

The general design of this study focused on four general questions related to ethnic differences as children deal with society, and four general questions related to the Kluckhohn model. Differences were looked at with the help of the following questions:

1. Do the children of the identified language groups cluster in certain categories when given an unstructured task about a town in the data bank system?
2. Are the clusters, if they exist, the same or different in each language group?
3. Do the children of the identified language groups cluster in categories when they talk about the town that they have investigated?
4. Does chronological age have any significance with respect to questions one through three?

The following questions were aimed at the value orientation of the language groups:

1. Do children from different cultures perceive the man-nature orientation differently? That is, are the perceptions of nature and the natural forces directly related to problem solving?
2. Do children of the identified groups perceive time differently?
3. Do children of the three language groups perceive the relational character of their environment differently?
4. Does chronological age within the three groups have any significance in questions one through three?

The first task was to translate the entire data bank system into Portuguese. Two people were involved in this task. Both had attended college in Portugal and were balanced bilinguals (Portuguese and English). Three steps were utilized in the translation process:

1. The separate translation of the information system from English to Portuguese by each individual.
2. The translation of the information from Portuguese back to English.
3. A discussion between both individuals on the areas of disagreement.

Three samples were utilized in this study. They were operationally defined as the American, Portuguese-American and the Portuguese. The major criteria for the selection of the children was language use and language competency.

The American sample had to be selected among the children who spoke only English at home. Children who spoke other languages at home were not eligible for the study.

In the Portuguese-American sample the children were born in the United States but the parents were born in Portugal. The children had to be bilingual (English and Portuguese) and had to speak Portuguese at home.

In the Portuguese sample the children had to have been in the United States no more than two years.

Within this framework all of the children were selected by using the table of random digits developed by the Rand Corporation. All of the children had to be sons or daughters of a blue-collar worker. Three cells were formed in terms of chronological age and language identification:

1. Cell One: 7 years and 1 month to 9 years and 0 months.
2. Cell Two: 9 years and 1 month to 11 years and 0 months.
3. Cell three: 11 years and 1 month to 13 years and 0 months.

After the selection of each group, each student was given a pretest on Prestonport, Massachusetts. This test was administered by the use of a tape recorder and each question was repeated twice. The test consisted of thirty multiple choice questions randomly selected from all of the sub-categories in the data bank system. For the Portuguese-American group it was stated that two systems were available, one in the English and the other in the Portuguese language.

After each child was pretested, it was stated that they were going to learn about a town called Prestonport, Massachusetts. They were told that they would learn about the town on their own, and they were free to ask any question that they wished about the town. The "helper" would be present to assist the student with the system by acquiring tapes, slides or helping the individual with mechanical difficulties. Hence, the free inquiry task was to give the child an unstructured situation so that he or she could direct his or her interests in some specified areas. As the child asked questions, each question or input was transferred into a code number in the retrieval system. The task was terminated after the child felt that he or she had no more questions about the town. A ten-minute period was given to each student to "think about" any more questions he or she had about the town. If no further questions were asked, then the child would move on to the next phase of the research project, the Kluckhohn Inventory.

The administrative procedure of the output stage was developed to give maximum output for each child. The best approach seemed to develop a "pretend" friend for the child. Accordingly, the following statement was given to each child. "Now that you have learned about Prestonport, let's say that you have to tell your friend about this town. What would you tell him about the town? You could say what you saw, what you liked and did not like, what problems you saw, or anything else that you want to talk about. Just remember that he does not know anything about the town."

After the completion of the phase, technically called the free inquiry task, a model had to be developed to apply value orientations to the data bank system. After careful explanation of several possible "Kluckhohn models" the less complex procedures were selected. After each child went through the data bank system in a free inquiry task, the child would then be asked to solve "problems" about Prestonport, i.e., the implementation of the Kluckhohn Inventory. Although both research findings are somewhat unrelated, it is important to note that the use of technology helps the study to explore cultural differences with the free inquiry task.

Results and Discussion

Table 2 illustrates that both language and chronological age determined the scores in the pretest. The American sample in all three cells scored higher than that of the Portuguese-American and the Portuguese group, and the Portuguese-American all scored higher than the Portuguese. The mean score also increased in each cell as the group increased in age.

TABLE 2

COMPARISON OF SCORES ON PRETEST FOR THE THREE CELLS OF EACH CULTURAL SAMPLE

N equals 8 in each cell

Cell Number	American	Portuguese-American	Portuguese
1	M 10.25 S.D. 2.32	M 9.50 S.D. 2.00	M 7.27 S.D. 2.05
2	M 11.62 S.D. 2.13	M 11.50 S.D. 1.00	M 8.62 S.D. 1.00
3	M 15.25 S.D. 2.76	M 12.75 S.D. 2.18	M 12.25 S.D. 2.86

Two conclusions were arrived at from the data:

1. As the children were less "Americanized" the perceptions of an American town decreased.
2. Age and language competency were critical factors in determining the perceptions of an American town.

The findings, however, did not answer many questions. What type of questions in the pretest did the Americans, Portuguese-Americans and Portuguese interpret correctly? Was there any direction in the type of questions answered correctly or incorrectly? Did age have any direction in the type of questions answered correctly or incorrectly? Would the system change any perceptions of Prestonport, given in the posttest, in terms of the questions asked by the children?

Because of the length of the tables, they will not be shown but only described in this paper. In three cases, the American sample differed from the other two with respect to clustering of answers on the pretest. In three cases the Portuguese sample differed from the other two; and in four cases the Portuguese-American sample was different. But in twenty cases, an overwhelming majority, no differences between the three groups could be ascertained.

Only three questions in the American and the Portuguese-American samples indicated some direction but with a closer analysis the questions in the pretest were not related.

If culture did not seem to be a determining variable, then age seemed to have some influence on the scores. This assumption was validated by the analysis of the spread of scores in each age group and question. Table 3 shows the spread of scores in each cell by chronological age. The lower the score, the more the spread in each cell and, therefore, the less clustering in each group. One may note that as the age increased more clustering took place, which indicates that the interpretation of social and/or cultural situations is dependent on chronological age. More research is needed in this area before any definite conclusions can be made.

The major focus in the free inquiry task in the data bank system was to analyze the topics that interested children when they were in an unstructured situation. The question was whether any cultural direction was dominant in any of the language groups.

TABLE 3

SPREAD OF SCORES BY CHRONOLOGICAL AGE*

Question Number		Cell Number	
	1	2	3
1	2	16	14
2	9	12	14
3	7	12	10
4	8	10	12
5	7	8	11
6	9	11	15
7	7	8	12
8	6	5	13
9	13	11	15
10	8	9	11
11	15	7	10
12	17	5	8
13	12	7	17
14	13	14	15
15	7	10	14
16	8	5	2
17	7	9	21
18	9	7	10
19	6	15	18
20	10	9	3
21	7	12	13
22	5	6	17
23	5	11	14
24	5	9	3
25	13	17	16
26	11	15	14
27	6	8	13
28	7	6	6
29	5	9	13
30	7	7	4
Mean	8.43	9.66	11.93
S.D.	3.33	3.33	4.64

*High score indicates high clustering. Low score indicates large spread of choice.

Table 4 shows that the mean input of the Portuguese sample in all three cells was lower than the other groups. The Portuguese-American and American means were mixed, and chronological age did not seem to be a factor for cells two and three. The mean score of cell three in the American sample was higher than the mean score of cell three of the Portuguese-American cell but in cell one and two the reverse is true. Cell two and three seemed to handle the system without any difficulty, with the exception of

TABLE 4

COMPARISON OF THE NUMBER OF MAJOR TOPICS SELECTED BY THE THREE SAMPLES

N equals 8 in each cell

Cell Number	American	Portuguese-American	Portuguese
1	M 9.62 S.D. 4.59	M 10.25 S.D. 3.53	M 9.25 S.D. 2.25
2	M 13.50 S.D. 2.47	M 18.87 S.D. 8.60	M 9.62 S.D. 4.77
3	M 21.62 S.D. 10.26	M 15.25 S.D. 6.04	M 11.50 S.D. 4.69

cell two of the Portuguese sample, but cell one shows that the mean input was well below the other cells.

As in the pretest, the findings seem to indicate that the Portuguese sample was either working in a different cultural direction or was at a disadvantage in relation to the type of task employed. With a category analysis, Table 5 reveals that the difference between the Portuguese and the other two groups was not in cultural direction but in the *quantity* of questions asked. Clusters were dominant in all groups in the same categories and where one group did not select a specific category, the selection of that category by the other groups was also low in input. The structuring of cultural direction in the three groups did not differ and the similarities were actually greater.

TABLE 5

QUESTIONS ASKED BY ALL GROUPS IN EACH MAJOR CATEGORY IN THE FREE INQUIRY TASK

Category Name	American	Port.-American	Portuguese
10 Orientation	0	0	0
11 Bibliography	0	0	0
12 Methodology	0	0	0
13 Geography	0	0	0
14 Human Biology	0	0	0
15 Behavior Processes and Personality	0	0	0
16 Demography	7	6	3
17 History and Culture Change	0	1	0
18 Total Culture	0	0	0
19 Language	0	0	0
20 Communication	7	5	2
21 Records	0	0	0
22 Food Quest	2	10	7

TABLE 5—Cont.

Category Name	American	Port.-American	Portuguese
23 Animal Husbandry	6	8	5
24 Agriculture	7	22	4
25 Food Processing	5	4	3
26 Food Consumption	10	12	2
27 Drinks, Drugs and Indulgence	0	0	0
28 Leather, Textiles, and Fabrics	7	7	5
29 Clothing	15	10	8
30 Adornment	0	0	0
31 Exploitative Activities	0	0	0
32 Processing of Basic Materials	0	1	4
33 Building and Construction	3	4	3
34 Structures	29	35	40
35 Equipment and Maintenance of Buildings	1	5	0
36 Settlements	34	17	33
37 Energy and Power	1	4	3
38 Chemical Industries	1	1	0
39 Capital Goods Industries	3	5	1
40 Machines	0	0	0
41 Tools and Appliances	1	0	0
42 Property	3	3	5
43 Exchange	6	3	2
44 Marketing	11	12	8
45 Finance	1	1	0
46 Labor	35	28	5
47 Business and Industrial Organization	0	0	0
48 Travel and Transportation	2	0	0
49 Land Transport	11	11	8
50 Water and Air Transport	20	36	31
51 Living Standards and Routines	0	0	3
52 Recreation	14	25	11
53 Fine Arts	6	3	2
54 Entertainment	0	1	0
55 Individuation and Mobility	0	0	1
56 Social Stratification	22	12	9

TABLE 5—Cont.

Category Name	American	Port.-American	Portuguese
57 Interpersonal Relations	2	0	0
58 Marriage	5	0	0
59 Family	4	0	0
60 Kinship	0	0	0
61 Kin Groups	0	0	0
62 Community	1	0	0
63 Territorial Organization	0	0	0
64 State	0	0	0
65 Government Activities	4	1	1
66 Political Behavior	14	~~8~~ 6	5
67 Law	0	0	0
68 Offenses and Sanctions	0	0	0
69 Justice	0	0	0
70 Armed Forces	0	0	0
71 Military Technology	0	0	0
72 War	0	0	0
73 Social Problems	0	0	0
74 Health and Welfare	5	4	3
75 Sickness	0	0	0
76 Death	5	3	1
77 Religious Beliefs	6	8	5
78 Religious Practices	3	0	0
79 Ecclesiastical Organization	1	0	0
80 Numbers and Measures	0	0	0
81 Exact Knowledge	0	0	0
82 Ideas About Nature and Man	0	0	0
83 Sex	0	0	0
84 Reproduction	0	0	0
85 Infancy and Childhood	8	3	9
86 Socialization	0	0	0
87 Education	30	20	11
88 Adolescence, Adulthood and Old Age	0	0	0
Totals	358	339	243
No. of Categories Used	42	36	33
No. of Categories Not Used	36	42	45
No. of Categories Selected Only by One Cultural Group	8	2	2

The logical conclusion would be that the input stage would be correlated to the output stage of the research study in terms of topics that were mentioned by the children. This assumption was validated. Quantity, and not cultural direction, is again the major factor among the three groups. The Portuguese sample used fewer categories than the other two groups, and the number of categories selected by only one group was 3, 2, and 2 (American, Portuguese-American and Portuguese, respectively). Clustering was predominant in the major categories related to the major categories in the input stage. Table 6 shows the output means and standard deviations of each group.

TABLE 6

COMPARISON OF CELLS ONE, TWO, AND THREE WITH RESPECT TO INPUT AND OUTPUT VARIABLES ON FREE INQUIRY TASK

N equals 8 in each cell

Cell Number	American	Portuguese-American	Portuguese
1	M 5.75 S.D. 2.81	M 7.00 S.D. 2.82	M 6.12 S.D. 0.99
2	M 9.12 S.D. 2.47	M 11.62 S.D. 6.82	M 8.12 S.D. 4.05
3	M 11.75 S.D. 4.86	M 10.37 S.D. 4.20	M 9.00 S.D. 3.85

Although the Portuguese group did score less in mean scores in cells two and three, there seems to be a relationship between the mean scores and the retention of the material. The Portuguese sample did better in the retention of the material in all of cell two and in cells one and three between the Portuguese and the American groups. The data seems to imply that there may be some relationship between the number of categories inquired about in one session and the retention of the material. That is, the higher the input for one session the lower the retention factor in the free inquiry task. More research is needed in this area before any concrete conclusions can be made.

It was assumed that the "common human problems" or value orientations would identify cultural directions among the groups. Table 7 defines the direction each group took in talking about Prestonport.

Culture and chronological age seem to be variables that determine value orientations in the "Kluckhohn Inventory." All the younger children, cell one, identified a direction toward a subjugation to nature. Typical responses in the protocols for this orientation were, "because God made us," "I like God because He helps us when we are in trouble," and "because God rules." The younger children seemed to view God as a very concrete entity, while in contrast, some of the older children abstracted the question in relation to their personal beliefs.

The American sample showed more of a value orientation toward control over nature than any other group, which seemed to indicate a different orientation in the problem solving task. Responses in this area were, "because man has his own mind and God doesn't," "I picked it because I think if you want to be something like that, God just watches over you. Like, he doesn't tell (you) what do do. You do it all on your own," and "I have to do my own work," all of which substantially differed from the Portuguese answers. Although the total responses *in the three groups identified a direction* with nature, the subjugated-toward-nature increased from the American to the Portuguese-American as the "mixed" group in the man-nature area.

The value of time seems to have no dominant direction for any group, and the primary directions were the present and the future. Chronological age is, however, an important variable in the interpretation of time. That is, time for the younger children was so concretized that it was impossible to abstract the past or the future. Many of the young children did not select the past or the future because of the fear of dying or not being born.

TABLE 7

VALUE ORIENTATIONS FOR KLUCKHOHN INVENTORY BY CULTURE AND CHRONOLOGICAL AGE

N equals 8 in each cell

	American			Portuguese-American			Portuguese		
Orientation	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
Over Nature	2	10	9	0	3	1	2	0	2
With Nature	5	13	12	11	12	17	8	9	15
Subjugated to Nature	16	1	4	13	9	6	14	15	7
Present	10	11	9	6	10	11	14	6	13
Past	7	3	6	8	4	2	3	6	2
Future	7	11	9	10	10	11	7	12	9
Individual	8	7	8	8	7	7	4	0	3
Collateral	7	10	14	7	14	10	8	5	5
Linear	9	6	2	9	3	7	12	17	16

The relational data directs all of the Portuguese sample in the area of lineality. The type of responses seemed to be related to the order in which the leader kept the society and/or the family together. In contrast, the American and the Portuguese-American groups emphasized the theme of working together or being your own boss, and of doing what one wants to do.

The "common human problem" is then related to culture and chronological age. The differences, especially in the man-nature and the lineal orientation, seem to increase with age. The Portuguese in the man-nature orientation increased in subjugation-toward-nature as age increased and accordingly, "over-nature" orientation decreased as age increased. Although the American and Portuguese-American sample seemed to be quite consistent for the orientations in all ages, the American sample did select more over-nature and less subjugated-toward-nature than the Portuguese-American sample. The Portuguese-American group again had the "mixed" value between the Portuguese and American groups.

Time orientation does not have any direction for the three groups. Chronological age may be a variable in this domain, especially for the younger children. As cited, the younger children seemed to concretize time into their own life in which the past and the future could not be abstracted into some sort of value orientation.

TABLE 8

KLUCKHOHN INVENTORY—FIRST AND SECOND CHOICES COMBINED

N equals 8 in each cell

	American			Portuguese-American			Portuguese		
Orientation	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
Over Nature	28	35	27	19	17	25	20	10	7
With Nature	26	27	26	33	19	24	32	34	33
Subjugated to Nature	26	28	27	31	35	31	28	36	39
Present	33	32	41	38	39	35	25	38	33
Past	26	21	23	37	39	19	33	26	25
Future	37	37	32	27	27	42	26	32	39
Individual	34	33	30	27	33	33	34	27	37
Collateral	37	47	40	32	41	44	33	32	23
Linear	41	29	33	53	38	37	44	53	52

Lineality is directed to both chronological age and culture. Table 8 illustrates that all of cell one had a direction toward lineality in the relational domain. Cell two and three of the American and the Portuguese-American samples shifted from lineality to collaterality whereas the Portuguese sample remained in the former area.

The posttest revealed that culture and chronological age are factors in interpreting the scores. As in the pretest, the American sample scores higher than the Portuguese-Americans, and the Portuguese-Americans scored higher than the Portuguese group. In this area, as age decreased, the mean scores decreased in all groups. Table 9 illustrates the mean scores and standard deviations of the groups by culture and chronological age.

An item analysis of the posttest revealed the same results as did the pretest with one exception. Although no cultural directions were identified among the three groups, the American sample did have an advantage in the content questions about the United States. The American group in the post-

TABLE 9

POST-TEST FOR ALL GROUPS DIVIDED BY CHRONOLOGICAL AGE AND CULTURE

N equals 8 in each cell

Cell Number	American	Portuguese-American	Portuguese
1	M 9.75 S.D. 2.91	M 9.00 S.D. 1.50	M 8.87 S.D. 3.72
2	M 13.50 S.D. 3.66	M 11.37 S.D. 3.06	M 9.62 S.D. 1.90
3	M 15.00 S.D. 1.77	M 13.00 S.D. 2.56	M 11.62 S.D. 2.19

test did differ more than the other two groups, but the differences occurred in content questions about Prestonport. Hence, experience and not culture must be taken into consideration in the posttest. The Portuguese were less familiar with American history, the Portuguese were not accustomed to the interpretations of an American town.

Implications of the Study

In the process of the study, some questions were raised regarding the make-up of the retrieval system. For example, most of the themes in both the input and output tasks of the children fell into a very few categories such as labor, structure, water and air transport. There were only thirty-one categories in all that were touched upon by the questions of the children, although several hundred categories of information were available. In the future construction of data banks in relation to children's values, some thought might be given to the narrowness and concreteness of their interests. Children should be encouraged to look at a wider range of subject matter through the use of tasks intended to stretch their search patterns, or the basic categories could be constructed so as to lead them into more abstract areas of thought and cultural behavior. Possibly differences in value orientation would appear if the children engaged in more extensive inquiry.

Another possibility for the construction of new retrieval systems is one geared specifically to the value domain. For example, the results of the Kluckhohn model indicated that the Portuguese sample had a lineal orientation. A system built in the relationship domain for these children could present social class, family structure, political power, economic and social mobility, and many other related areas in a slightly different light.

Changes within retrieval systems based on cultural differences have a more promising future. Judging from the information received from the "Kluckhohn Inventory," the children with different cultural backgrounds do have a different approach to society. It is possible that the data bank used was relatively alien to some of these children. Perhaps if the material were presented in a way more sympathetic to lineality and man's subjugation to nature, these children might have learned better how to conceptualize their ideas. Since the possibilities for research in data banks on an international scope looks promising, this might be one aspect of the problem that could be scrutinized more carefully.

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ED212145

FL 012 751

HOW TO DESIGN A CAI COURSE FOR MEXICAN AMERICAN MIGRANT STUDENTS

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In preparing courseware, one must consider the background, needs, and interests of the audience in order to provide adequate instructional material. The audience considered in this paper is the Spanish-speaking migrant student, who is more commonly of Mexican descent and who possesses unique cultural and linguistic qualities. Although there are many Mexicans who migrate to the United States to find work, this paper will deal only with the Mexican American migrant.

The Mexican American migrant has long suffered the effects of his economic situation, educationally as well as socially. Following the crops, either within the state or from state to state, has created a terrible dilemma not only for the student trying to learn under these conditions but also for the teacher who must continually try to pick up the educational pieces of these children. Many dedicated teachers attempt to fill in the gaps as best they can but many more allow these students to become lost in a cloud of educational discouragement.

The educational problems a Mexican American migrant pupil faces are basically the same as any Mexican American or Chicano student. Because of their low socioeconomic status the families of these Mexican American adolescents are concerned primarily with the struggle for existence. Education is often not as important as the more immediate basic needs of the family, and, as a result, emphasis is placed on work and not on educational goals. Very little in the school curriculum seems to stimulate the intellectual growth of a people with different cultural goals and values. The Mexican American student, who has difficulty adapting to the American cultural and educational system, frequently feels that his teachers do not understand or attempt to comprehend these adjustment problems. Careless remarks, actions, and misconceptions about the Mexican American culture by teachers and administrators alike often create aggression, resentfulness, hostility, and insecurity in Mexican American and migrant students, and eventually these children drop out of school in despair.

Mexican American migrant children also display a unique cultural and linguistic amalgamation. Jealously holding on to Mexican customs and traditions, the Mexican American migrant child has learned to live in a culturally different society. Many children have learned new American customs and traditions while retaining their old ways. Often the migrant student feels that he is being ostracized because of his racial background; but he has learned to cope by practicing the mores of his culture at home and conforming to American standards in the outside world.

Most Mexican American children speak Spanish and have an aural-oral command of the language; but they have little, if any, literacy skills in either their native language or the target language (English). There are, without a doubt, degrees of proficiency in Spanish and English displayed by Mexican American migrants. The following clearly illustrates the ever-present effect that the economic status of a culture has upon language and education as a whole.

The degree of proficiency in Spanish or English varies among Mexican American and other Latin Americans with relationship to recency of family migration from their native countries, proximity to the U.S.-Mexican border, and the extent of cultural influences. The extent of native language usage among family members also varies in respect to income level, occupation, and place of residence within the general community. More Spanish is spoken among low-income Mexican families. It is also true that low-income Mexican American families are less able to afford homes in assimilated middle-class communities in the cities and suburban areas where English is used with greater frequency by Mexican Americans (Valencia 1978: 4).

A very curious phenomenon that has occurred in the language of many Mexican Americans and migrants is the creation of a unique dialect, standardly called *pocho*. This mixture of the Spanish and English languages has produced a linguistic occurrence that has proven to be a stumbling block for both educators and Mexican American students. Since the student has not sufficiently learned either the Spanish or the English language, he must struggle to learn the target language (English) without the help of his native tongue (Spanish). Furthermore, a feeling of inferiority overcomes these students when mistakes in English are made in the classroom, where Anglo students already have a command of the language.

If we add the load of transiency and little chance for continuity in coursework to the already overburdened Mexican American migrant student, one can clearly understand the reasons for the increased drop out rate from schools and delinquency of these students. Much has been done, however, and the fate of the migrant student seems at best to be ameliorating. Many states, like Michigan and Illinois, provide summer schools for migrant children, up to age sixteen, to help them catch up on instruction they have missed throughout the year. These programs also maintain an open atmosphere for learning, such that the child is not intimidated to learn and enjoy himself in a school setting. To help alleviate the problem of continuity in coursework, a computer-based program called the Migrant Student Record Transfer System was established in Texarkana, Arkansas. The migrant student's progress is recorded by teachers wherever the student is currently residing. Then it is sent to the center where it will be made available to any other teachers the student has in the future.

More recently, a third innovative program for migrant students has finally attracted educators. Computer-assisted instruction for Mexican American migrant students may not only spark motivation and interest in these students but may also offer an alternative in education. Characteristics of the target population indicate a need for the content and pace of learning to be controlled. A computer can offer not only this capability but can also present material in a unique manner, providing problem-solving challenges and reinforcing subject matter. Since the student works by himself and has primarily the computer to judge him, doubts about himself as an effective learner may diminish.

In order to begin to design a course for the proposed target population, we must first consider the student's communicative capabilities. Since we cannot rely on the written word of either Spanish or English, a cassette tape must accompany the computer lessons. Learning to read in English then becomes of prime importance and thus necessitates a lesson, approximately an hour in length, to be composed of two parts: a reading and a communicative strand or section. Studies in language by Thomas G. Sticht (1972) and others have shown that if a student develops a listening fluency first, the skills of reading, writing and speaking will be enhanced. If the student could listen to the tape first and hear the English words he would be reading and practicing on the computer, this theory of learning, already practiced with young children learning a language, could prove successful.

All presentations on the computer should maintain the student's attention and interest at all times. This approach has been taken in accord with Bogoch (1968) who cites a "considerable body of evidence that supports the conclusion that information is rarely, if ever, stored in the human nervous system without affective coding." Stevick (1976:10), Brierly (1966), and Chafe (1973) also believe that what is important and emotionally charged seems to be more rapidly embedded in the brain than unimportant or emotionally neutral material. Things familiar to the Mexican American migrant, like "souped up" cars, pick-up trucks, and family members would interest a child as well as a teenager. Pictures of these items could be transferred to a computer screen and could be animated to help teach sight words, dialogs, grammar rules and important cultural material. A cassette tape would be made available so that the student could be able to associate the written word seen on the screen with the spoken word on the cassette. This cassette would also be used to give the student instructions on the operation of the computer.

Exercises on visual discrimination of alphabet letters and words, such as touching (many computers have the touch capability, so that the student is able to touch the screen for his answer) or typing a letter or word that is different or the same would be useful in the beginning phases of language learning. Similar exercises using sight words and the spelling of words could also be incorporated in a design for Mexican American migrants. Furthermore, since a cassette tape is required for this type of an audience, Spanish could very efficiently be used to make explanations and reinforce English words and conversational dialogs.

The most beneficial contribution of computer programming to the instructional field has been the use of task analysis and specific objectives in course design. Learning to write and use specific objectives should be of prime importance to all educators: those who write their own programs, those who desire to use programs successfully in their teaching careers, and those who desire a method of defining objectives of a course more precisely. Specific objectives will help eliminate confusion and failure for the educator as well as the student. Once the author of a course design has studied his audience carefully, specific objectives for that audience should be written. These objectives should not only be clear and concise but they should also be realistic and fit the grade level for which they are written. All objectives of a course should also be capable of being measured. Many times an educator *would like* to teach an attitude, an interest, or an appreciation (e.g., for literature) but does not specifically know how he will do it. Although these are very hard to measure, they can, nonetheless, be written so that the student is actively involved in exercises that will meet these types of objectives. The behavioral goals that can be measured most easily are those concerned with a skill, an understanding, or a knowledge of a particular subject. When writing objectives, the author should be ready to classify his objectives as belonging to one of the six categories here described.

Mary B. Craik (1971) describes five basic steps in writing objectives. First and of utmost importance in writing objectives is the point of view. Objectives should be written with the student in mind so the objectives are stated from the learner's point of view. The category—skill, understanding, knowledge, attitude, interest, appreciation—should be included next. Third, the terminal behavior or the behavior expected of the learner should be stated. The fourth item of an objective is the conditions under which the behavior is to be performed. Conditions such as time limitations, use of references and/or testing site will help the learner as well as the educator know exactly how the objective will be met. Fifth, the objective should state the level of proficiency the learner must attain. These five steps are illustrated in this example: The student is to develop knowledge of the vocabulary used in *The Merchant of Venice* so that he can write the definitions of fifty words chosen from the play without the use of any aids, in sixty minutes with no more than fifteen errors. This type of objective should be written if the author of a course design is not writing for a computer lesson. A computer designed course, however, necessitates a more structured format with each of the five steps described by Craik broken down into smaller and more explicit units.

The CAI course design used here as an example has been prepared for Mexican American migrant students in the very beginning levels of language instruction. Since there was a problem of literacy, a format was chosen in which the student began with only the workbook and tape components of the course (shown in modules 1-3 of Table 1) and then progressed to the computer portion in module 4. Since we are concerned with sound symbol correspondence of a language (English) the students possibly may have heard in their surroundings but not learned, the skills of listening and speaking are practiced and reinforced first (modules 1 and 2) and then reading is practiced in modules 3 and 4. In this way many of the theories of language learning are employed.

The objectives given Table 1 represent the first three steps offered by Craik. Objectives are written from the student's point of view and illustrate the categories of knowledge and understanding. The instructional goals have been broken down into units called modules. These modules have a heading describing the goals of the lesson (Module 1—Greetings (Communication). Modules are grouped together according to similarity of material and each objective (numbered) starts from the least difficult to the more difficult objective. The objectives are listed with the terminal behavior first in such a way that they very quickly define the goal of the objective: 1101-Correlate pictures with some greetings heard on the audiotape. The numbers and letters (1101A) that come directly beneath the objectives are the specific exercises of the objective.

TABLE 1
OBJECTIVES FOR LESSON 1 ON GREETINGS, VOCABULARY WORDS AND LETTER FORMS

Module 1—Greetings (Communication)

- 1101 Correlate pictures with some greetings heard on the audiotape.
  - 1101A Listen to greetings in Spanish and English.
  - 1101B Circle picture for greeting heard in English on the audiotape.
- 1102 Recognize number of words in greetings.
  - 1102A Listen to words of greeting singly and combined in normal speech.
  - 1102B Draw lines counting the number of words heard in a greeting.
- 1103 Orally produce greetings upon hearing a contextual cue in English.
  - 1103A Listen to stress and intonation patterns of greetings.
  - 1103B Repeat greetings after model on audiotape.
  - 1103C Listen to conversational order of greetings.
  - 1103D Orally produce a greeting upon hearing a Spanish cue.
  - 1103E Orally produce a greeting in English upon hearing another English greeting as a cue.

Module 2—Vocabulary Words (Communication)

- 1201 Correlate pictures with key vocabulary words heard that begin with letters A-F.
  - 1201A Listen to key vocabulary words and their translations while looking at their representative pictures.
  - 1201B Circle picture for the key vocabulary word heard.
- 1202 Discriminate between singular and plural form of key vocabulary learned in 1201, according to spoken and pictorial clues.
  - 1202A Listen to singular and plural ending /z/ of vocabulary while looking at their representative pictures.
  - 1202B Circle picture for the plural word heard.
  - 1202C Discriminate between singular and plural pictures for the word heard.
- 1203 Orally produce the singular or plural form of the key vocabulary learned in objectives 1201 and 1202 upon hearing a Spanish cue.
  - 1203A Listen to the singular and plural forms of the key vocabulary in Spanish and English.
  - 1203B Write specified symbols to indicate singular or plural forms heard on the audiotape.
  - 1203C Repeat singular and plural forms heard on the audiotape.
  - 1203C Orally produce the singular or plural form of the vocabulary words upon hearing the Spanish translation.

Module 3—Letter Forms (Reading)

- 1301 Identify upper-case letters A-F.
  - 1301A Listen to letters A-F while looking at their upper-case written representations.
  - 1301B Copy the upper-case letters A-F.
  - 1301C Circle the letter heard from a choice of two letters.
- 1302 Identify lower-case letters A-F.
  - 1302A Listen to letters A-F while looking at their lower-case written representations.

1302B Copy lower-case letters A-F.
1302C Write the lower-case letter heard on the audiotape.
1303 Match upper-case forms of letters with their lower-case forms.
1303A Copy upper and lower-case letters A-F heard on the audiotape.
1303B Match upper-case letters A-F with lower-case forms.
1304 Identify alphabetical order of letters A-F.
1304A Read letters A-F in alphabetical order while they are heard on the audiotape.
1304B Copy the letters A-F in alphabetical order.
1304C Circle a letter to complete three letters in a series.
1305 Recognize sight words—Hi, bed, car, touch.
1305A Match pictures with their written words.
1305B Trace around sight words.
1305C Circle the sight word heard on the audiotape.

Module 4—Letter Forms (Reading) Computer with Audio
Introduction—Demonstrate familiarity with the computer.
1. Listen to an introduction to the computer in Spanish.
2. Touch symbols on screen upon being given a cue on the audiotape.
3. Type letters A-F on keyboard.
4. Follow directions indicated above given on the audiotape.

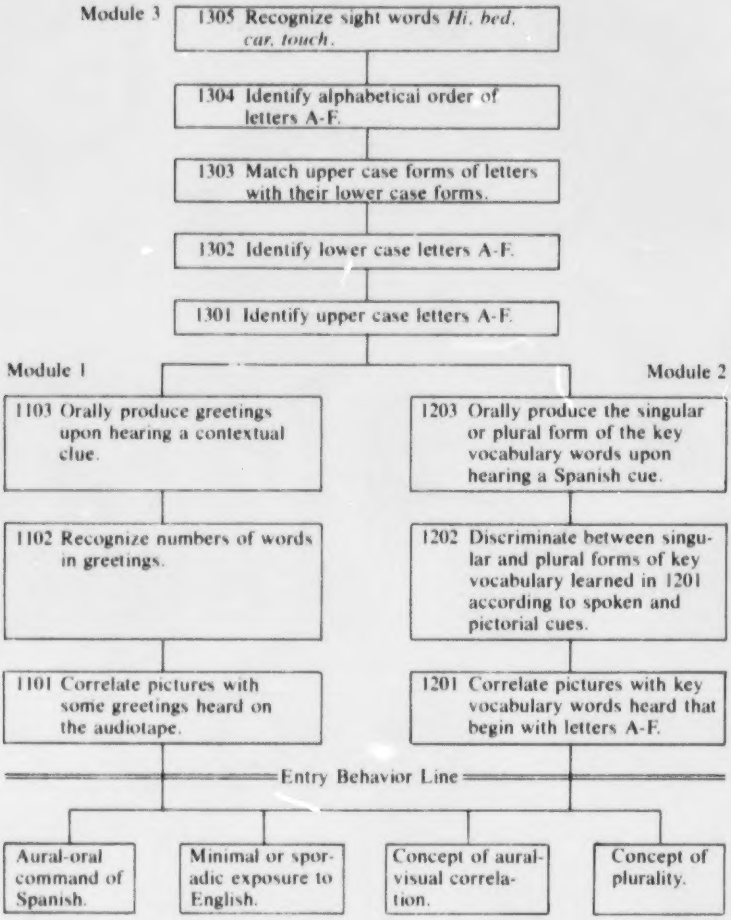
1401 Match upper-case letters with lower-case forms.
1401A Touch corresponding upper-case letter in one column with the lower-case letter in another column.
1401B Touch the correct lower-case letter for upper-case form given.
1402 Identify alphabetical order of letters A-F.
1402A Touch letter heard on the audiotape needed to complete three letters in a series.
1402B Type letters A-F in alphabetical order.
1403 Recognize sight words—Hi, bed, car, touch.
1403A Match vocabulary words with corresponding pictures.
1403B Touch the correct vocabulary word heard on the audiotape for a picture given.
1403C Touch the written word for the word heard on the audiotape.

As one can see, the very basic skills of learning simple greetings, alphabet letters, pluralization and sight words are used because they are required for students in the beginning phases of language learning. Sight words were selected according to the "experience approach," which Lillie Pope (1967) describes as necessary "to help the student build a stock of words that he recognizes at sight, the vocabulary must be coordinated around his interests. It cannot be emphasized too often that in order for the instruction to be effective, the interest of the student must be captured and maintained continuously" (Pope 1967:45).

In order to see more clearly the hierarchical order of learning, a task analysis diagram must be constructed (See Figures 1 and 2). Each objective is listed according to its respective module and placed according to knowledge required for the following modules. The lesson used here as an example is not linear. In other words, the modules do not follow one another. This diagram illustrates that Modules 1 and 2 are required for Module 3.

FIGURE 1

HIERARCHICAL TASK ANALYSIS FOR LESSON 1 ON GREETINGS, VOCABULARY WORDS AND LETTER FORMS—TEXT WITH AUDIO

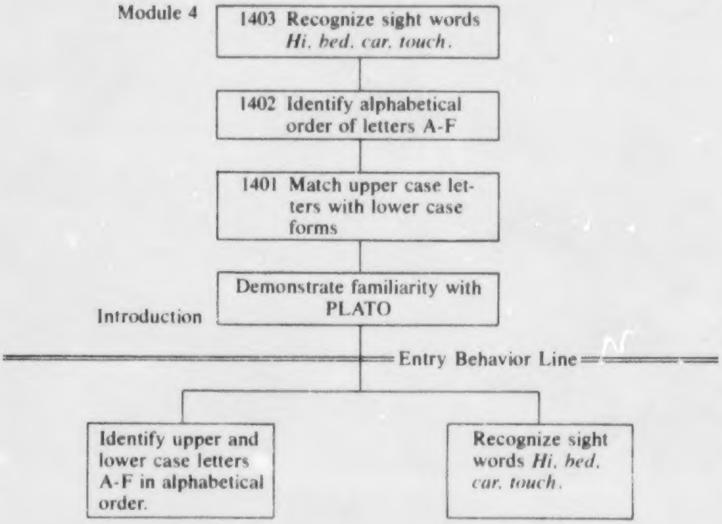

Module 3
1305 Recognize sight words *Hi, bed, car, touch*.
1304 Identify alphabetical order of letters A-F.
1303 Match upper case forms of letters with their lower case forms.
1302 Identify lower case letters A-F.
1301 Identify upper case letters A-F.
Module 1
Module 2
1103 Orally produce greetings upon hearing a contextual clue.
1102 Recognize numbers of words in greetings.
1101 Correlate pictures with some greetings heard on the audiotape.
1203 Orally produce the singular or plural form of the key vocabulary words upon hearing a Spanish cue.
1202 Discriminate between singular and plural forms of key vocabulary learned in 1201 according to spoken and pictorial cues.
1201 Correlate pictures with key vocabulary words heard that begin with letters A-F.
Entry Behavior Line
Aural-oral command of Spanish.
Minimal or sporadic exposure to English.
Concept of aural-visual correlation.
Concept of plurality.

The entry behavior line at the bottom of the diagram shows the knowledge the student must know in order to work in this lesson.

Tables 2-4 show the Module Pathways of Modules 1-4. Each objective is listed with its corresponding medium, time, and instructional mode. In this

FIGURE 2

HIERARCHICAL TASK ANALYSIS FOR
LESSON 1 ON GREETINGS,
VOCABULARY WORDS AND LETTER FORMS
PLATO W/AUDIO


Module 4
1403 Recognize sight words *Hi, bed, car, touch*.
1402 Identify alphabetical order of letters A-F
1401 Match upper case letters with lower case forms
Demonstrate familiarity with PLATO
Introduction
Entry Behavior Line
Identify upper and lower case letters A-F in alphabetical order.
Recognize sight words *Hi, bed, car, touch*.

way the educator has, at first glance, an account of the conditions under which the objective will be met.

The working times given are approximate, determined by the course designer, based on logic and experience. The student in this particular program has the time specified, or more time if necessary, for the workbook portion of the lesson. When calculating working times, the course or lesson designer should allow from thirty to sixty seconds for each item of the exercises given; the student's ability, and difficulty of the item should also be considered. The time on the computer, however, is more structured, so that approximately thirty seconds are allowed for the student's response to each item and additional time is added for the lesson presentation according to the time the author needs to present the material on the computer.

The instructional strategies are detailed explanations for the author of the workbook or computer lessons, so that he knows exactly what to write. These instructional strategies are provided by the course designer so that the educational concepts are taught specifically the way he planned them. The medium, time and objective numbers are again provided, plus the description of the lesson in the tutorial. A realistic, true-to-life application is also given after each module. Modules 1 and 4, shown in Table 5, are given here as representative examples.

TABLE 2

MODULE PATHWAY FOR MODULE 1 (GREETINGS) AND MODULE 2 (VOCABULARY WORDS)

Module 1

Objective Number	Medium	Time	Instructional Mode
1101	Text w/Audio	0:03	Looking Listening Circling Listening Drawing (lines)
1103	Text w/Audio	0:05	Listening Speaking
		0:11 minutes	

Module 2

Objective Number	Medium	Time	Instructional Mode
1201	Text w/Audio	0:03	Looking Listening Circling
1202	Text w/Audio	0:03	Looking Listening Circling
1203	Text w/Audio	0:04	Listening Writing Repeating Speaking
		0:10 minutes	

TABLE 3

MODULE PATHWAY FOR MODULE 3 (Letter Forms—Reading)

Objective Number	Medium	Time	Instructional Mode
1301	Text w/Audio	0:03	Looking Listening Copying Circling
1302	Text w/Audio	0:03	Looking Listening Circling Writing
1303	Text w/Audio	0:03	Looking Listening Copying Circling
1304	Text w/Audio	0:03	Reading Listening Copying Matching
1305	Text w/Audio	0:05	Looking Listening Matching Copying
		0:17 minutes	

TABLE 4
MODULE PATHWAY FOR MODULE 4 (Letter Forms—Reading)

Objective Number	Medium	Time	Instructional Mode
Introduction	Computer w/Audio	0:04	Looking Listening Touching Typing
1401	Computer w/Audio	0:03	Looking Touching
1402	Computer w/Audio	0:03	Looking Listening Touching
1403	Computer w/Audio	0:05	Looking Listening Matching Touching
		0:15 minutes	

TABLE 5
REPRESENTATIVE INSTRUCTIONAL STRATEGIES FOR MODULES 1 AND 4

Module 1: Greetings (Communication)
Medium: Text w/Audio
Time: 0:11

Objective 1101: Correlate pictures with some greetings heard on the audiotape.

Tutorial: Pictures in the workbook will depict the greetings Hi, Hello, Good morning, Good afternoon, and Good evening, such that the student can make a distinction between them after looking at the representative pictures and listening to their translations in Spanish on the audiotape. The student will hear the greetings in English and Spanish; then he will hear descriptions in Spanish of the situations in which these greetings would be used. The graphics should be explicit enough to prompt a greeting from the student.

Drill and Practice: See enabling objectives 1101A and 1101B.

Objective 1102: Recognize number of words in greetings.

Tutorial: The student will listen to the pronunciation of the words of the greetings so that he is aware of the correct pronunciation of these words in normal speech and can aurally discriminate between them.

Drill and Practice; See enabling objectives 1102A-1102B.

Objective 1103: Orally produce the greetings upon hearing a contextual cue in English.

Tutorial: This objective will focus on the oral production of the greetings. The student will hear the correct stress patterns of the greetings in a brief encounter of two persons.

Drill and Practice: See enabling objectives 1103A-1103E.

Application: The student will be asked to greet another student or a teacher appropriately.

Module 4: Letter Forms (Reading)
Medium: Computer w/Audio
Time: 0:15

Introduction to Computer: The student will hear an orientation to the computer in Spanish. The student will become familiarized with the computer keyboard and screen by typing the letters A-F on the keyboard and touching letters or symbols on the screen. The student will follow simple directions given on the audiotape that will practice the above exercises.
Drill and Practice: See exercises 1-4.
Objective 1401: Match upper case letters with lower case forms.
Tutorial: The computer screen should show the upper and lower case letters in order together, then scrambled, then alphabetized again. The upper and lower-case letters will flash, matching the two, then the letters will be shown in alphabetical order using both upper and lower-case forms. An upper or lower-case letter will be given and the corresponding letter will flash from a group of letters given in a column.
Drill and Practice: See enabling objectives 1401A and 1401B.
Objective 1402: Identify alphabetical order of letters A-F.
Tutorial: Letters A-F will appear in the upper case form. Then the lower-case letters will appear. These will appear scrambled, then the upper and lower-case forms will match and again appear in alphabetical order.
Drill and Practice: See enabling objectives 1402A-1402B.
Objective 1402: Recognize sight words—Hi, bed, car, touch.
Tutorial: The words will appear on the screen and they will be said on the audiotape. The words will appear again, then the letters of the words will erase and then reappear again.
Drill and Practice: See enabling objectives 1403A-1403C.
Application: The student should be able to identify alphabet letters and sight words in various written signs, books, etc.

Finally, the media selection summary chart will prove useful for the course designer. In this summary, a condensed grouping of the modules will not only reveal the medium and objective numbers, but it will also show the testing times and totals. A pretest is required in order to determine the correct lesson for the student and a posttest is necessary to evaluate the learner's progress.

Table 6 is also included as an example of pretest and posttest descriptions. The title indicates the modules, testing mode, and time required for testing. The objectives of the module or modules to be tested are listed, and the description follows, with each objective, number of items for each objective and number of items required for mastery and non-mastery. The pool is the number of testing items that need to be written in order to have enough material for the student to work with. Enough items are supplied so that the student has a chance to go through the lesson and more testing items, in case he happens to fail the first time through.

Designing and writing courseware for Mexican American migrant students will indeed help the educational progress of these children. Through research, our experience as teachers, and a caring attitude, we can develop courseware of which we can all be justifiably proud.

TABLE 6

MEDIA SELECTION SUMMARY: LESSON 1—Greetings, Vocabulary Words and Letter Forms

Modules and objectives	Text with Audio	Computer with Audio	Testing with Audio	Total Time in Each Module
			0:05 (Pretest Modules 1 and 2)	
Module 1: Greetings				
1101 Pictorial and Aural Correspondence	0:03	—		
1102 Aural Discrimination of Words in Sentences	0:03	—		
1103 Oral Production	0:05	—		0:11 (Module 1)
Module 2: Vocabulary Words				
1201 Pictorial and Aural Correspondence	0:03	—		
1202 Aural Discrimination of Singular and Plural	0:03	—		
1203 Oral Production	0:04	—		0:10 (Module 2)
			0:05 (PostTest Modules 1 and 2)	0:10 (Total Testing Modules 1 and 2)
			0:04 (Pretest Modules 3 and 4 Text with Audio)	
Module 3: Letter Forms				
1301 Upper-Case Letters A-F	0:03	—		
1302 Lower-Case Letters A-F	0:03	—		
1303 Upper and Lower-Case Letters A-F	0:03	—		
1304 Alphabetical Order of Letters A-F	0:03	—		
1305 Sight Words	0:05	—		0:17 (Module 3)

TABLE 6—Cont.

Modules and objectives	Text with Audio	Computer with Audio	Testing with Audio	Total Time in Each Module
Module 4: Computer				
Introduction to Computer	—	0:04		
1401 Upper and Lower-Case Letters A-F	—	0:03		
1402 Alphabetical Order of Letters A-F	—	0:03		
1403 Sight Words	—	0:05		0:15 (Module 4)
			0:03 (PostTest Modules 3 and 4 Computer with Audio)	0:07 Testing Time (Modules 3 & 4)

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ED212146

COMPUTER-ASSISTED BILINGUAL EDUCATION

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When one thinks of Computer-Assisted Instruction (CAI) in the public schools, one usually imagines a group of gifted math students huddled around a microcomputer, playing war games. While it is true that most schools purchase computers to teach programming skills to the gifted, computers can be especially effective in educating minorities, and more specifically, linguistic minorities.

This paper focuses on four aspects of computer-assisted bilingual instruction. The first part is an introduction to computer literacy and awareness. The second presents guidelines for establishing a computer-assisted bilingual instruction site. The third part provides a description of some of the computer-assisted bilingual projects in existence, and the fourth identifies the needs for the future.

Introduction to Computer Literacy and Awareness

Compared with business and industry, computers have been underutilized by the educational establishment. In a statement before the U.S. House of Representatives Committee on Science and Technology (1979), Lewis M. Branscomb, Vice President and Chief Scientist of IBM stated that the reasons for this underutilization include lack of access to funds for equipment, a generally held belief that values education is more important than vocational and structured learning to which computers are more suited, the reluctance of teachers to accept changes in the nature of their roles, and consequently, the lack of market incentive to generate instructional materials. Although some or all of these allegations may be true, Branscomb also agreed (personal communication) that much of the difficulty is due to computer vendors not "bridging the gap to reach the elementary and secondary public schools." That is, vendors have perhaps not been sensitive enough to the feelings of apprehension, intimidation, and anxiety that inexperienced users often feel towards computers. Branscomb suggests that one step that could help to alleviate this problem would be for teacher education institutions to familiarize teacher trainees with computer technology and its use in the classroom, and include some "hands-on" experience. This should include a knowledge of computer-related terminology, uses for computers in the classroom, and the benefits of computers in education.

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Common Computer-Related Terminology

Computer-related terms can fall into four categories: (1) system types, (2) system components, (3) computer hardware, and (4) computer software.

System Types.

1. Time-sharing. Several computer terminals attached to one large processing unit.
2. Stand-alone. A terminal and processing unit "all-in-one" (e.g., home computer).

System Components

1. Hardware. The physical equipment forming a computer system.
2. Software—the programs that enable computers to process data. These programs can be written in a number of languages, such as COBOL, BASIC, APL, TUTOR, and FORTRAN.
3. Courseware-the actual lesson the student sees.

Computer Hardware.

1. Input Device. The device that brings the data from the user to the central processing unit (CPU). These devices include keyboards, card readers, tape readers, and disk readers.
2. Output Device. The device that transfers the data from the central processing unit back to the users. These include Cathode Ray Tubes or CRTs (TV screens), printers, and voice synthesizers.

Computer Software.

1. Program. Set of commands or statements devised to permit the computer to carry out certain instructions.
2. Bug. A mistake in the program.
3. Debug. To search for and correct bugs.
4. Binary numbers, bits, and bytes. The basis of the coding system in a computer. Compare it to the decimal system.

Decimal (45)

100s	*10s*	*1s*
0	4	5

Binary (45)

32s	*16s*	*8s*	*4s*	*2s*	*1s*
1	0	1	1	0	1

______________________________ bits

8 bits = 1 byte
16K = 16000 bytes

5. RAM (Random Access Memory). The kind of memory you can put a program into or that you can store data in for later retrieval.
6. ROM (Read Only Memory). Memory that cannot be changed. Already part of the central processing unit, ROM can only be read. A four-function calculator contains only ROM—the circuitry that permits it to add, substract, multiply, and divide.

Uses for Computers in Bilingual Education

There are seven ways in which a computer may be utilized in a bilingual program.

1. Tutorial Mode. In this mode, the computer acts as teacher and is

responsible for presenting instructional material. In a multicultural setting, content area material may be presented in any language.

2. Drill and Practice. This mode presents the students with exercises to reinforce a certain skill. Although typically used to provide practice in arithmetic, in a bilingual program, this mode could be employed to practice ESL vocabulary, grammar, and pronunciation.
3. Simulation. In this mode, the computer simulates a real life situation. In the classroom, this is most useful for the science class where actual experimentation may be expensive or unsafe.
4. Dialogue. This mode provides the students with an opportunity to engage in a "conversation" with the computer. The computer can ask the students questions or the student can initiate the asking. Conversations can take place in any language and about any subject (provided the computer is programmed to do so).
5. Instructional Gaming. In this mode students can play games against the computer or against one another. Games can be created around arithmetic, ESL, or any other content area. Students can compete against time or accuracy and problems can be posed in any language.
6. Testing. This mode can provide students with almost any sort of test, from multiple choice to essay. In a bilingual program, a computer may be used to translate a test that the rest of the class is taking or to administer a dominance test in reading. Students may also write compositions on the computer, which can be graded by the teacher.
7. Management. Here, the computer assumes the tasks of diagnosing, assigning, routing through a curriculum, progress evaluation, and record keeping. This is particularly useful for those bilingual programs that don't have enough students of a similar language background to warrant a separate classroom. The students can be tested in their own language on the computer and can keep up with their content courses on the computer (in their native language) while also attending classes in English with the others.

Benefits of C.A.I. to Bilingual Education.

There are numerous advantages to incorporating a CAI component into a bilingual education program. These advantages affect students, teachers, and researchers.

One of the most noted benefits is the computer's ability to motivate students. Crandall (1976) examined the role of CAI in the education of ethnic minorities and found that standardized test scores soared when Mexican American, Black American and American Indian children used a computer for drill and practice for only fifteen minutes a day. He attributed this phenomenon to the concept of locus of control. Crandall states that children coming from a heritage of poverty are *externally* controlled in that they believe that what happens to them is the result of destiny, chance, the power of others or God. These children would not then see relationship between their efforts and their achievements and would, therefore, not see much use in orienting themselves towards success. The computer provided these children with an opportunity to see the cause-effect relationship between trying and achieving, because the interaction between the children and the terminal was direct and because the computer provided the children with immediate feedback.

Another important benefit of CAI for students is its individualizing capabilities. Students learning "on-line" can work at their own pace, at different levels, on different assignments, and in different languages. This is especially beneficial to bilingual programs serving migrant students, who typically enter a program with varying levels of content area knowledge, reading ability, and proficiency in English.

Other benefits to students include providing them with private feedback to their responses so that they are not embarrassed or humiliated by making errors in front of others, and by providing them with impartial feedback, as the computer has no value system of its own. Unlike a textbook, a computer in the drill and practice mode can provide students with different sorts of responses based on the degree of correctness or the nature of the wrongness of their answers.

Computer benefits to teachers are also numerous, with the most obvious being its efficient, accurate, and speedy ability to manage and record student progress. In addition, computers make maximum use of instructional time, as the student is constantly interacting with the computer, while in a traditional classroom situation, the student is active only when called upon by the teacher. Marty (1975) notes that this efficient use of instructional time is especially advantageous to the second language teacher as the computer can take over the sometimes wearisome task of second language drill and practice, leaving the teacher free to help the students develop free expression.

Finally, Stolurow (1973) pointed out that CAI also has benefits to researchers, as it provides an excellent experimental setting for research in learning because of its ability to collect detailed records of student performance.

GUIDELINES FOR ESTABLISHING AND MANAGING A COMPUTER-ASSISTED BILINGUAL INSTRUCTION SITE

An important question posed by Stansfield (1973) is whether to use computers to bring instruction "to a point of scientific efficiency that borders on brainwashing" or whether to use them for "the emancipation of the students's mind." The obvious answer, and Stansfield agrees, is that in a total learning environment, students should be exposed to rigid and structured learning activities as well as opportunities for more creative endeavors. The computer can be utilized to do both and teachers, curriculum developers, and administrators should be conscious of this when planning a CAI site.

Assessing Needs and Defining Objectives for a Computer-Assisted Bilingual Instruction Site.

The process for identifying needs in a computer-assisted bilingual education project is essentially the same as the process employed in identifying needs in *any* bilingual education program. This would include consulting with parents, politically influential individuals and groups, teachers, aca-

demic specialists, professional experts, community agencies, "hard" demographic, educational, and scientific studies, and test scores.
Areas of particular concern in a bilingual program include:

1. Language Needs
    - A. First or dominant language
        1. listening comprehension
        2. oral production
        3. reading comprehension
        4. composition
    - B. English
        1. listening comprehension
        2. oral production
        3. reading comprehension
        4. composition
2. Content Area Needs.
    - A. Math
    - B. Science
    - C. Social Studies
    - D. Fine Arts
    - E. Physical Education
3. Affective Needs
    - A. Self-concept
    - B. Attitude towards first language
    - C. Attitude towards first culture
    - D. Attitude towards second language
    - E. Attitude towards second culture

It would also be quite useful to include a description of the sociopolitical climate in which these needs lay. The most important point to remember, however, is to fit the computer to the needs, not to fit the needs to the computer.

Again, establishing objectives for a computer-assisted bilingual education project will be like establishing objectives for any bilingual education program, with the inclusion of a few additional considerations. For example, one might use the following criteria for establishing objectives for a regular bilingual program.

1. Do the objectives identify learning outcomes?
2. Are they consistent with the needs (language, content area, and affect)?
3. Are they precise, achievable, beneficial, politically appropriate, and measurable?

When incorporating a CAI component, the following additional questions should be considered.

1. Why is CAI being implemented?
2. In what domains is CAI to show an advantage (time, costs, student performance, attitude and motivation, management, or research)?
3. How will the computer be used to best help the teacher and the students (testing, teaching, reviewing, drilling, remedial teaching, for math, for ESL, etc.)?
4. Which students, (how many, and for what length of time) would most benefit from CAI?

5. Will the CAI project satisfy a single purpose (fulfilling the bilingual program's specific commitments) or several purposes (fulfilling needs for several programs, the entire school or district)?
6. Will the program's products (lessons, computer programs, curricula, and handbooks) be disseminated?

Acquiring Equipment

Obviously, the biggest obstacle to acquiring computer hardware is funding. Dennis (1978:14) presents some creative remedies to this problem by offering the following suggestions.

1. Rent a terminal and talk a nearby university into the use of their computer.
2. Rent a terminal and talk a bank or other business into donating access to their computer.
3. The school administration already uses computers for their work and you talk them into sharing the resource with instruction.
4. A teacher agrees to write some administrative programs for the school or district if they will get the computers for both uses.
5. Talk a local business or benefactor into donating a small computer system in exchange for doing some computing jobs for the donor.
6. Talk the administration into buying a small computer in kit form. The students do the assembly and save considerable money, in addition to having a great learning experence.
7. Work in a "fairy land" school in which your administrator walks in one day and "hands you" an instructional computer.

Friedenberg (1981) suggests that bilingual program staff propose sharing computer equipment with other programs, such as gifted programs. In addition she provides a list of possible funding sources for purchasing or leasing computer equipment. These include local school funds, ESEA Title VII funds (if a CAI component was included in the proposal), state bilingual funds, ESEA Title IV-B funds for library and audiovisual equipment, sharing with other programs (ESEA Title I, ESAA Title VII, or state/federally-funded gifted programs), and contributions from the PTA.

After the funding arrangements have been determined, one or a few individuals should be in charge of "researching" computer equipment. The following steps should be followed:

1. Read up. Different computers are capable of carrying out considerably different tasks with different capacities, speeds, and prices. Secure some consumer-oriented literature about computers and try to get a feel for which machines can suit your needs.
2. Go to a computer store in your area and look at the equipment, compare prices, and talk to the sales people. Do not be afraid to ask questions. As little as you may feel you know about computers, the vendors will know even less about bilingual education. Pick up literature about each machine you look at.
3. Take the information you have thus far gained and once again review your needs and objectives. Speak with your colleagues and anyone else whose input could be of help to you.
4. Return to the computer store and speak more seriously with the ven-

dors. Explain to them exactly how you intend to use the computers and see what they recommend. Ask them for the names of other schools in your area that have similar equipment. Visit those schools and find out if they are satisfied (instructionally and mechanically).

5. When you are ready to make a purchase, review the following checklist to be certain you get only what you want and need.
   A. *Memory Capacity*
      —in line with your present needs?
      —expandable for your future needs?
   B. *Input Equipment*
      —via cassette (slow but relatively inexpensive)
      —via disk (faster but more expensive)
   C. *Courseware*
      —Are appropriate programs available?
      —Can I or a colleague program what we need with little difficulty?
      —Are ready-made (appropriate) programmed cassettes/disks available at a reasonable cost?
   D. *Output Equipment*
      —video display (CRT)
      —hard copy (printer)
      —audio device (voice synthesizer
      Do I need these now?
      Can I add these in the future?
   E. *Service and Reliability*
      —warranty?
      —service available close by?
6. Once you have the equipment, read all the accompanying literature carefully. Make sure that you and your colleagues understand how to use the equipment before you begin showing the students.

Acquiring and Developing Courseware.

Unfortunately, due to the somewhat lackluster response given to CAI by primary and secondary schools, there has been insufficient commercial development of computerized lessons, or courseware. Those schools that have responded to CAI enthusiastically have had to rely on whatever courseware is commercially available, borrowing courseware from other districts, adapting programs from commercially-available books, and developing their own courseware from scratch.

Developing computer courseware from scratch has the benefit of providing students with programs specifically geared for their particular curriculum, but has the disadvantage of requiring much time, cost, and planning. One well-intentioned teacher, for example, took great care in selecting appropriate computer hardware and in writing several innovative arithmetic games for his primary school students. Each lesson began with a rather thorough explanation of how to use a computer terminal, followed by an arithmetic quiz. Thus, students were re-introduced to computer terminal use and re-quizzed each time they began a new lesson. In addition, his lessons did not fit together into a well-planned curriculum or "package." This clearly illustrates the need for careful curriculum planning *before* lesson development begins.

Since courseware design is time consuming, costly, and requires expertise in both educational materials development and computer programming, the most efficient way in which to develop computerized lessons would be to train teachers to develop the lessons and have high school students (volunteers from a computer club or hourly-paid) program them.

Teachers should be aware of the following principles when designing computer courseware.

1. Like the planning of any lesson, computerized lessons should include a measurable objective, entering prerequisites, and a means in which to evaluate whether the objective has been attained.
2. Students should be able to control their own path through a lesson. This can be accomplished by providing a lesson index to which students have access at any time or by providing them with a series of options after each lesson or section, such as:

What will you do?

A. continue to the next lesson
B. go through this lesson once again
C. return to the previous lesson
D. take the quiz on this lesson

Friedenberg (1979) provides several suggestions for the development of CAI courseware for children. They are as follows:

1. Make sure the lesson content follows a logical sequence.
   —present easy before hard
   —regular before irregular
   —general before exception
   —a before b, 1 before 2, first before second
   —make sure part 2 drill doesn't contain content from part 3
2. Make formats consistent. The following format is suggested.
   —rule and/or example
   —short drill (5 items)
   —rule and/or example
   —short drill (5 items)
   —instructional game examining all rules presented in the lesson

   If a lesson has one part for second graders and one part for fifth graders, put a game at the end of each part so that the second graders do not have to attempt fifth grade material to get to a game.
3. Make sure displays are attractive to the eye.
   —make them balanced-looking
   —make them centered
   —make sure there is plenty of spacing
   —where too much space exists, make words or figures larger
4. Don't present too much writing at one time. It discourages the user from reading it. Try these:
   —user presses a certain key after each sentence to bring on the next sentence
   —divide into logical groups and block in or frame each group
   —write inside an illustration
   —make instructions read like comics

5. Avoid using weapons (guns, tanks, and bombs) excessively. Try rockets, spaceships, animals, and sports activities.
6. Give lots of reward for correct work. Try to avoid rewards that are too repetitious or corny.
7. While doing drills, students like to see how much they have accomplished and how much more they have to do.
   —use tool of measurement (thermometer, rising rocket, emptying hourglass) as the student is doing a drill.
   —in matching drills, cross out items as they are correctly answered.
   —during short drills, present items one at a time, but leave answered items on.
8. Try to make games competitive (e.g., by speed or number correct). Students may compete against each other or against the computer.
9. Use graphics and animate as much as possible. Use various sizes and types of writing. For children, usually the larger the writing, the better.
10. Punctuate, spell, and capitalize as a textbook would. If a student answers a drill correctly but forgets to punctuate, tell the user to correct the punctuation, but do not reject the response.
11. Avoid sex biases in your lessons.

Managing, Supervising and Evaluating

CAI projects must be carefully managed, supervised, and evaluated. Francis (1977) identifies several issues that a CAI site manager/superviser would most likely have to address. They include:

1. To what extent will recreational uses be permitted?
2. Who will be given priority to use the computer(s) and for how long?
3. How can teachers and programmers be rewarded (non-monitarily) for exemplary work?
4. Which teachers will be selected (asked?) to write lessons?
5. Is the computer-assisted bilingual education project achieving the objectives set out in the planning stages of the program?

The final issue can be best addressed by carrying out a program evaluation. Although technically the evaluation would only be responsible for determining whether or not the pre-established program objectives were attained (allowing for any evaluation model that considers objectives), Francis (1977) points out that, "one simply *cannot* avoid a comparative evaluation." That is, since the use of computers in educational programs (especially bilingual programs) is still relatively rare, colleagues, parents, administrators, and funding sources will most likely want to know whether the effort (and expense) was worthwhile. Thus, no matter how unstructured, an attempt must be made to compare "on-line" and "off-line" learner performance.

COMPUTER-ASSISTED BILINGUAL EDUCATION PROGRAMS IN EXISTENCE

In the past, educational institutions implementing computer-assisted instruction have mainly existed at the university level. Public schools have been a bit slower to catch on, with elementary schools being the slowest. Those primary and secondary schools that have implemented CAI, have done so with the philosophy that computers are to be used mainly for the exceptionally talented, to teach computer programming skills. A few public schools have ventured to provide remedial help in math skills and a very few have gone so far as to provide practice in a range of skills to students in special education and bilingual education programs.

This section will describe four computer-assisted bilingual education programs at the primary school level.

The Southwest

The Dallas Independent School District (Dallas, Texas) has been using Radio Shack TRS-80s, a voice synthesizer that speaks to each child by name, and a printer so each student can get printed confirmation of her/his progress. Their elementary curriculum is composed of a math component and a Spanish/English reading and language comprehension component. The program is a transitional one in that the children learn on the computer in Spanish while they learn English in class. Once English has been mastered, the student continues the computerized instruction in English. The program is intended to supplement the teacher's efforts, and most sessions last only about ten minutes. Teachers have reported great improvements in the student's scores because of the computers.

The Midwest

The Danville Public School District (Danville, Illinois) began implementing its computer-assisted bilingual education program with the PLATO system, a sophisticated time-sharing computer system connected to the University of Illinois by phone lines. Unlike home or micro-computers, PLATO offered creative and detailed graphics, animation, a touch panel for those too young to type, and access to any of thousands of computerized lessons developed by experts at the university.

With the assistance of a Title VII Basic Bilingual Grant, the Danville program was able to lease four computer terminals, which were placed in the library of the elementary school that housed the bilingual program. The students, all of whom where Mexican American, were referred to the computer center on a remedial basis. With the permission of the University of Illinois, staff from Danville's bilingual program chose the most frequently-used math lessons and translated them into Spanish. In addition, the staff designed approximately fifty ESL and language arts lessons that were programmed by hourly-paid high school students. Because institutionalizing the use of PLATO proved to be too costly, the Danville School District recently purchased eleven microcomputers that were placed in individual classrooms. Courseware is being developed in math, science, English language arts, Spanish language arts, and ESL. Students are still referred to the computer on a remedial basis. Future plans include developing courseware for the many Hmong children who have recently been entering their schools.

The Northeast

Staff at the University of Vermont's Center for Communication Disorders are presently developing courseware for limited-English-proficiency exceptional children. Their programs have focused on language assessment utilizing an Apple II Plus (48k) microcomputer interfaced with a Mountain Computer Super Talker. Unlike many other speech synthesizers, this system provides speech synthesis capabilities that actually digitize a human voice, rather than generating it. Thus, the voices of actual native speakers are used, so the speech is natural sounding and assessment can be carried out in any language providing one model with native competence is available. In addition, a three-button panel was designed so that children would not have to attempt typing. Most of their courseware is in French and Hmong. Future plans (hopes?) include establishing bilingual CAI sites in New Hampshire for French-speaking children, in Maine for French, Cambodian, Laotian, Thai, and Vietnamese-speaking children, in Massachusetts for Portuguese-speaking children, in Rhode Island for Hmong children, and in Connecticut for Spanish-speaking children.

Lima, Peru

The American School of Lima has recently established a computer lab to introduce programming skills to their students. Their hardware includes three Radio Shack TRS-80s and two Apple II computers.

In recent years, the enrollment at the American School included more and more Peruvian and other non-American children. This has created a need to provide classes in the teaching of English as a second language. Modest attempts have recently begun to provide these students with ESL courseware. At this point, the computer-assisted ESL is being implemented on a limited and experimental basis. All actual teaching occurs in the classroom and the computer is used mainly in the drill and practice mode. Students use the computer during their free time.

Future Needs

Wilson and Fox (1981) claim that, "within ten years, microcomputers will become at least three times as productive as they are now at half the cost." Despite this promising prediction, there are still critical needs limiting the implementation of effective computer-assisted instruction programs. More than ten years ago, Luskin (1970) presented a list of the most critical obstacles to the development of CAI. They are:

1. availability of individuals with appropriate competent skills;
2. sufficient local funds for implementation;
3. sufficient funds for research and development;
4. attitude of faculty;
5. lack of sufficient incentives to stimulate preparation of educational software;
6. poor documentation of educational software; and
7. existence of a communications gap between educators and representatives of industry.

Unfortunately, the situation has not changed much since that time. Few schools of education offer programs that train individuals in both courseware development and in programming. Many school teachers still fear that computers will either replace them or burden them. Teacher education institutions rarely include computer literacy in their training programs. There is still a great need to develop and disseminate courseware and to research the academic and cost effectiveness of CAI.

In bilingual education, it would be particularly worthwhile to examine not only the academic effectiveness of CAI, but also the effects it may have on student motivation and self-concept. More and better communication is needed among primary and secondary school CAI sites and between educators and hardware/software vendors. And, as is always the case with bilingual education, more funds are needed for research, materials development, and for the acquisition of hardware.

Despite the many obstacles, bilingual educators must continue to explore and implement innovative ways in which to educate and motivate limited-English-proficiency children. In these days of austerity, we must learn to communicate and share with others more than ever. Teachers should not feel intimidated by the emergence of computers, but instead, should welcome them as an aid to both them and their students.

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ED212147

PLENTY OF BILINGUAL TEACHERS*

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INTRODUCTION

Imagine reading a report on Planned Variation Head Start, Follow Through, or the First Grade Reading Studies, and finding the only information reported about the types of instruction each program represented was the information that all the classes were conducted in English. What conclusions would you draw from the different outcomes reported for the various programs?

This may seem absurd when talking about programs for the mainstream of U.S. children who are native speakers of English. Educators and the general public find it easy to recognize that there are important differences between educational programs serving the English-speaking majority. However, there seems to be a tendency to lump together all bilingual education programs serving the non-English-speaking child. It is often reported that bilingual education "works" or "does not work" based on a single dimension of the programs being used as the basis of this claim: the fact that two languages were used as the medium of instruction.

This forum on the "technology" of bilingual education seems like an appropriate place to discuss the fact that there is undoubtedly as much diversity among bilingual education programs as there is among classrooms in which only English is used. By paying more attention to the details of this diversity, it is hoped that this paper will help move the discussion past the beachhead question of whether bilingual education "works", to higher ground where the relevant question is "What program elements will make bilingual education work better?"

The Individualized Bilingual Instruction (IBI) program discussed in this paper represents a bilingual education program that has been judged "successful". It has been nationally validated by the U.S. Department of Education and listed in their directory of *Educational Programs That Work*.[1]

As detailed later, the IBI program has demonstrated with several groups of Spanish-speaking children served over the past ten years, that with three or more years attendance in the bilingual program, children's test scores in English can be brought up to a level nearly equal to their Spanish. At the same time the bilingual program strengthens their primary language skills so that they demonstrate significantly higher vocabulary and reading skills in Spanish than a comparison group of comparable linguistic background. And on the average, after three years of attendance, Spanish-dominant chil-

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dren in the IBI program have been able to score at or above national norms in both arithmetic and English reading tests.

This paper will provide information on the "technology" of the IBI program: the type of curriculum selected and how and why the staff was selected and trained, as well as information on teaching methods and classroom organization. This discussion will include instructional elements that relate particularly to the bilingual/bicultural needs of the children served, but it will also include discussion of many more general instructional techniques that the IBI program adapted from other successful educational programs, many of which are not bilingual.

As more case studies of successful, or for that matter unsuccessful, bilingual programs find their way into the literature, it may be possible to identify common elements that will improve program effectiveness. The use of dual languages for instruction will remain as the core requirement of programs for non-English-speaking children, since bilingual education is predicated on the axiom that children need to be able to understand the language of instruction if they are to learn from it. However, when this principle has been sufficiently accepted to allow us to direct our attention to other program elements that produce effective learning, the technology of bilingual education will take a great leap forward.

HISTORY OF THE IBI PROGRAM

Ten years ago the Office of Bilingual Education requested educational agencies to develop a program model that would uniquely meet the needs of the children of Spanish-speaking migrant farm workers. Migrant families who moved between Texas and Washington State brought together educators from these two states, and a unique program proposal was developed that goes by the name of IBI, or Individualized Bilingual Instruction. It involved setting up parallel programs in both Washington and Texas, plus a mobile component in which teachers moved with children leaving Texas in the migrant stream and served them at temporary sites as they moved north and back to Texas again. This mobile component eventually served children moving to Illinois, Oregon and Idaho as well as to Washington State.

The central feature of the program model is that the primary teaching staff employed are bilingual adults recruited from migrant families. This was to facilitate the "mobile component," which was designed to see if some greater continuity could be achieved in the schooling of children who move several times a year by utilizing someone who moves with them in the same family or group of families, to be their teacher for part of the day. This bilingual adult teacher guides the children through a prepared bilingual curriculum that supplements whatever educational program the local schools offer, which in many cases—particularly in northern states—is not taught by bilingual teachers. The program sites in Washington State and in Texas that do not move also use the migrant adult teachers, as it was decided to develop only one program model.

The IBI program is now in its tenth year of program operation and has served, over the years, about 1,000 children. It has been both a demonstration and a research program. As such, it has kept track of the children's progress over a period of years, following a consistent data collection plan.

IBI is therefore one of the few bilingual education programs in the U.S. now producing longitudinal evidence of program effectiveness.

HOW THE IBI CURRICULUM AND TRAINING MODEL EVOLVED

In developing the IBI program model, its staff looked at other educational programs that had used a paraprofessional level of staff to see if these programs had been effective, and if their experience would suggest guidelines on the type of curriculum and training that would be needed for migrant adult teachers.

One such program is known as PSI, or personalized system of instruction, which has spawned many similar efforts over the decade of educational experimentation since it was first described to the public by Keller in his now classic paper, "Goodbye, Teacher . . . ," (Keller, 1968). The PSI program was first implemented in Brazil, at the college level. As a visiting professor from the United States, Keller was teaching in English. Although the students knew some English, he found that they did not do well in a large class situation conducted entirely in their second language. He therefore developed written course materials to replace the lectures, and he set up a "personalized system of instruction (PSI)". This system involved hiring tutors who could speak Portuguese to meet with students individually on a regular basis. These tutors guided the students through the course materials, providing explanations and feedback on the lessons, and checking the mastery of tests that were used to decide when the student showed sufficient mastery of the materials to move on to the next unit.

In the past decade, thousands of teachers have offered courses following the PSI model, at the elementary, secondary and college level. In general, most educators have not used it primarily as a means of overcoming a language barrier, as had been the case in Brazil. They thought of it as a means of increasing student mastery over what was being achieved through large group instruction. At the elementary and secondary school level it was seen as a form of mastery teaching as advocated by Benjamin Bloom in his influential article, "Learning for Mastery" (Bloom, 1968).

Whatever the reasons for using the method, there were many research studies indicating it was effective for improving student learning not only at the time the class was being taken but in follow-up studies to measure retention of learning at a later date (Kulik, Kulik and Cohen, 1979). It seemed to have particular relevance for IBI and other bilingual programs because it provided an instructional system that could utilize a readily available teaching resource—adults (or even older students) from the same ethnic and language group as the children to be served. And these teachers could be effective even if they had a limited educational background.

KEY ELEMENTS IN THE IBI PROGRAM

Use of Paraprofessional Teachers

Staff developing the IBI program used many of the key elements of PSI to design a program to meet the needs of Spanish-speaking monolingual and bilingual children from age three to third grade. The primary feature adapted to the IBI program was, of course, the use of the paraprofessional teachers to guide children through a prepared curriculum, providing individual explanation and feedback, although usually within a small group setting. In the IBI program, the use of bilingual paraprofessional teachers from the same ethnic background as the children served the additional purpose of lessening cultural shock as children entered a school environment. Through their common language background these teachers could also provide enough explanation to be sure the children understood what they were learning even when lesson materials required use of the less familiar second language, English.

IBI hires a core of professional teachers, each of whom supervises from six to ten paraprofessional teachers who in turn work with from 60 to 100 or more children. The number of children served depends somewhat on the age; fewer preschool children can be served per staff member than school age children.

In the IBI program the bilingual paraprofessional teachers are recruited from the same families or group of families as the children served. They are screened by a local committee made up of parents and the supervisory staff at the local site, and are hired based on the recommendation of this screening committee.

Priority in hiring is given to applicants who have completed high school or have their GED (equivalent of a high school diploma based on testing). However, about a third of the IBI teachers have less than a high school education when first hired and obtain their GED later as a condition for their continued employment. All are bilingual.

The training of paraprofessional teachers used in the IBI program is based on the promise that imitation is the fastest route to understanding. The professional staff demonstrates the teaching skills, both by role playing and by stepping in and taking over instruction of an individual child or small group with the teacher watching. Each training unit concerns a particular set of teaching skills, and after the explanation and demonstration, the trainer observes the teachers as they are teaching and records examples of their use of each of the required teaching skills. They later go over these observations with the paraprofessional teacher. At least two observations are done for each training unit, and then a checklist is completed with criteria as to how many of the teaching skills the teacher must be able to "demonstrate consistently" in order to pass the training unit. Follow-up observations are also done to check the key behaviors teachers are supposed to be using and to see if these are being maintained some months after the initial training.

Use of Structured, Sequential Curriculum

The second key element of the PSI model adopted by the IBI program is the development or selection of structured, sequential curriculum materials for every subject area taught. These areas include oral Spanish and English, reading in Spanish and in English, and math and handwriting.

Phonetically based, programmed reading materials are used in both Spanish and English; the oral language materials in Spanish and English are also very carefully programmed with constant repetition and review so that children retain new vocabulary and structures through continued usage. In most cases the curriculum track extends from the preschool level to third grade but is otherwise ungraded. There are placement tests to help establish where a student should begin in the lessons. In a review paper such as this, only the basic characteristics of the curriculum can be described; specific identification and description of the curriculum materials used for each subject area are available from other sources (McConnell, 1981).

Use of Mastery Learning Principles

The third characteristic of PSI used in the IBI program is that all lesson materials are mastery oriented. There is a criterion of successful performance for every small step in each curriculum track. This makes it clear to even an inexperienced teacher when the child is ready to move on, and when further review is needed. In most cases the curriculum materials selected by IBI already had periodic tests or comprehension questions built in. In some, however, mastery tests were devised by the IBI staff and inserted into the curriculum.

Teachers record child progress in each curriculum area taught each day, and a weekly summary is reviewed by the professional staff and subsequently mailed to the program evaluation office. Problems in individual progress are therefore called to the attention of the professional staff who can assist the teacher. If the child has not mastered whatever is involved on first presentation, the professional can devise alternate materials to use for remediation and review. The professional staff is therefore ultimately responsible for child progress, but the immediate teaching role is by the paraprofessional teachers.

Individualized Instruction

A fourth key element for PSI programs and for IBI is that the materials lend themselves to individualization so children can move through them at their own pace. In IBI, once the child is able to work in practice sheets, workbooks, and programmed reading materials, the program is completely self-paced. A group of children are assigned to a paraprofessional teacher and they will work side by side, usually at a large table, with the teacher moving from one to the next providing individual assistance, checking work and assigning new lessons. No two children in the group are likely to be working at the same place in the materials. Frequently groups will represent a cross-age grouping. The training given IBI teachers includes the skill of keeping a group of children on task doing independent work, while providing assistance to individual children.

It was more difficult for IBI to individualize the pre-reading and the oral language curricula because the teaching of these subjects depends on oral instruction and response. Time constraints made it impractical to provide this oral instruction one-to-one so these subjects are taught to children in a small group gathered around the teacher in a semi-circle. To assure that each individual child within the group is understanding the lessons, the techniques of "direct instruction" are used. This means that the teacher provides a response signal and children learn to respond together at that signal. In this way the teacher can tell if each individual child is able to provide the response—not just the most vocal and outgoing, or the child most comfortable with the language of instruction for that lesson period. The teacher also frequently asks individual children to respond rather than the group in order to make sure that each child understands the lesson.

The teachers also use some other techniques to let children progress at their own pace in subject areas that must be group taught. If only part of the group passes a mastery test in the reading primer, for example, the teacher will go on to new material for part of the lesson period, confining questions to check individual child mastery to the children ready to work in this new section. The whole group is then taken back to review the previous section, and during this review the individual questions are directed to the children who are working at this level. Individualization is also achieved by having a number of groups, and by regrouping children if some are moving through the materials more quickly than others. The professional staff is responsible for help with regrouping.

Positive Reinforcement

The fifth important element in both PSI and IBI teaching methods is the reinforcement of learning provided by the individual contact. The training given IBI teachers shows them many techniques for pacing children's work so there will be many contacts with each child during any one lesson period. The IBI training also places emphasis on how to give encouragement, create interest and incentive, praise effort and attention as well as accomplishment, etc. The very patient and encouraging relationship that exists between IBI teachers and the children is the program feature that visitors, especially parents, comment on most frequently.

PROGRAM ELEMENTS RELATING TO SPECIFIC ISSUES IN BILINGUAL EDUCATION

Ethnicity and Language Use by Staff

As mentioned before, all of the paraprofessional teachers in the IBI program represent the same ethnic group as the children served, and all are bilingual. There is an unusual degree of parental participation in the IBI program; one aspect of this is that representatives of the parent group, together with local administrators, actually select all teachers that are hired. The local screening committee uses informal means to decide whether applicants know enough English and Spanish to teach in the program. For example, the teacher applicants may be asked to respond to questions or to read in both languages, or they may be asked to translate something from one language to the other. The type of Spanish and English used by teachers reflects that used in the community.

A frequently raised issue in bilingual education is how important it is that teachers be good speech models for the children. In this case the choice was dictated by necessity; it would not have been possible to staff the program with adults from the migrant population and at the same time obtain teachers who would be able to be a speech model, in either Spanish or English, that was substantially better than, or at least different from, the speech the children ordinarily hear. On the other hand, the IBI program has not created what Gonzales (1977) refers to as a "third language" problem for the children. By this Gonzales means that the attempt in some programs to provide "standard" Spanish or English confuses the children and requires them to learn a "third language", which is a "prestige" form of the local dialect.

The importance of having teachers who represent the same ethnic backgrounds as the children served by bilingual programs is another much discussed issue. Proponents have argued for the benefits of rapport and the motivation that is associated with role models of the same ethnic group (Gudschinsky, 1971; Modiano, 1975). The other side of the issue has been found in some research that noted that teachers from a minority ethnic group had often changed social classes in the course of qualifying to teach, and that the barrier set up by social class differences made some minority teachers have relatively little rapport with the minority students they were teaching (Paulston, 1977).

Since the IBI teachers were recruited from the same families as the children served by the program, they do not represent a different social class. In addition, they have all of the advantages that may stem from having a common language and cultural background as the children. In addition, as migrants or ex-migrants, the IBI teachers have a sympathetic understanding of the problems of acquiring an education when schooling must be disrupted by frequent moves, and this may help them to be both patient and encouraging with the children they teach, as well as very intent that the children succeed in overcoming the odds in acquiring an education.

Pattern of Language Usage

Another much discussed area within bilingual education concerns whether the languages should be used "together", i.e., by the same teachers, sometimes switching from one language to another within a teaching period; or whether they should be kept "separate", either through having certain staff who use only one language or the other, or by having time blocks within the day when only one language is used.

One of the arguments in favor of separation of languages centers on the prevention of confusion or mixture of languages, which may result in children not learning either language adequately. Another argument in favor of separate time blocks for language use is that this system provides the incentive to learn both languages to the level of communicative competence. It is presumed that the time block approach will enable the student to learn the concepts they need academically in their primary language, but will also force them to practice with the language in which they are less fluent at other times in their daily schedule.

There are arguments on the other side of this issue as well (Mackey, 1972; Jacobson, 1981). Some of these arguments are that if a child does not understand something, the longer he or she has to wait for clarification in the other language, the less beneficial it will be. The child may have forgotten the question by the time the answer is provided. This occurs when time blocks are rigidly adhered to for language usage. Mackey argues that when children with different language backgrounds are found in the same group, it is much easier to keep the whole group attentive and learning if the teacher can switch languages when he or she senses children from the "other" language preference are tuning out. Other arguments are that it is costly to provide a separate staff for each language, and that it reduces the number of subjects that can be taught and increases boredom when essentially the same lessons are routinely repeated in the other language.

Because much of the teacher-child interaction in the IBI program is on a one-to-one basis, the communicative pattern that seemed most workable resembles that between parent and child in a bilingual home. Teachers switch from one language to the other as necessary to try to achieve understanding and communication with a particular child. Working with a group of children, the teacher may frequently change languages from one child to the next depending on each child's competency in the two langauges.

The exception to this is that teachers are trained to use mainly English for instructions, modeling, asking comprehension questions and praise when they are teaching English reading or oral English, and conversely use mainly Spanish while teaching oral Spanish or Spanish reading. If they ask a question and get no response, they may rephrase the question into the other language in order to find out if the child doesn't know the answer or just didn't understand what was being asked. Children frequently ask what certain words mean, and teachers translate.

The IBI program is a very "language intensive" program in that the individual contact requires that every child must respond repeatedly to questions directed only to him or her, unlike a group teaching situation in which the more vocal children may do all the talking. Because of the curriculum content in both languages, the child must use both languages to some extent in order to respond, and these must be communicative responses that go beyond single words. Initially teachers may have to model responses in the second language, which the child repeats, but they become more competent in formulating their own responses with time.

The Language in Which Reading Instruction is Started

Whether reading instruction should be started in the child's first or second language is an issue that has been the basis of more theoretical discussion and research than perhaps any other in bilingual education. The theoretical arguments advanced are almost all in favor of the logic of starting reading in the language most familiar to the child. The empirical evidence, however, is very mixed as to which method is faster in advancing the reading skills of the child, or which leads to greater comprehension particularly of the second language (Engle, 1975).

Eventually the IBI program may provide some useful comparative evidence on this issue, in that until 1980, all children started reading instruction in English, their second language, for reasons that will be explained later. However, beginning in 1980, with the consent of the parents, most of the new enrollees at one site were switched to initial reading instruction in Spanish. The progress they make in both Spanish and English reading over time will be compared to the accumulated test results for children with whom the initial reading instruction has been in English. Nothing will have changed except the order of initial reading instruction (i.e., the same curriculum materials used, number and competency of staffing, time devoted to reading as a subject, and the same home background in terms of linguistic competency of the children and family support for language development and reading skills). All of these are factors that have not been adequately controlled in many of the previous comparative bilingual reading research studies.

The historical reason why IBI started reading in English is that when reading was added to the IBI curriculum, the project staff was unhappy with available commercial curriculum materials that might be used to provide beginning reading skills leading into the programmed Spanish reading curriculum that had been selected. The project felt it needed to develop its own primer for Spanish reading and it took time to develop and field test these curriculum materials. In the meantime, the English reading curriculum was started since the curriculum materials were readily available.

Once the IBI staff had the beginning Spanish reading curriculum developed, the proposal was made to the parents that the sequence of reading instruction should be changed. In general, the parents were not in favor of this. Their position seemed to be basically, "if something is working, why change it?" Parents of Texas children who moved north to school in which children had been learning to read only in English from the beginning of first grade were pleased that their children, who had received the IBI preschool reading program in English, seemed to be able to keep up. They were further reassured by the fact that when Spanish reading was introduced, the children had already learned basic reading skills and therefore they were able to learn Spanish reading very quickly. In very little time they acquired significantly better reading skills in Spanish than the comparison children who started reading in Spanish and English at the same time in the Texas school system.

When the IBI program applied for funding as a demonstration project in 1980, this issue was again discussed with parents. At that time the value of comparing the reading approaches was discussed and most of the parents agreed to trying the other approach, which would introduce Spanish reading first, as part of the demonstration.

HOW EFFECTIVE IS THE IBI PROGRAM?

The Study Sample

Of the children served in the IBI program since 1971, 50 percent entered the program as monolingual Spanish speakers. This high percentage of children who knew no English is due to such factors as having one site on the Texas border with Mexico, and the relatively high number of recent immigrants among migrant children even in Washington state. An additional 28 percent were dominant in Spanish but had some knowledge of English. For the purpose of the longitudinal study of program outcomes, only these children, whose primary language was Spanish, have been included in the study sample. It was presumed that the effectiveness of the program with these children from non-English-speaking homes would be of the greatest interest since they are presumably the group that is the greatest concern to school districts implementing bilingual education programs. Of the children in the sample, over 98 percent have one or both parents who are Mexican or Mexican American.

The project has used the Wide Range Achievement Test since 1974 as a measure of arithmetic skills and English reading, so the longitudinal study includes all tests of children age five to nine who were tested during the years 1974 through 1979 (1,020 tests). It also included the Spanish and English vocabulary tests for these same children, covering the same time period. The program did not have Spanish reading data for the same time period, so the results reported in the paper are those taken from the 1980 program year evaluation.

The Study Design

Because the IBI program serves migrant children who move in and out of the area, attendance is quite irregular. Only about 20 percent of the children in the total program are involved in the mobile component in which the teachers follow the children to set up services in another state. This results in a somewhat longer period of attendance each year for these children, but even this is full of interruptions because of the time lapse in moving the program and setting up at a new site, and the fact that families move at different times. The average length of attendance of children at one location within a calendar year is about five months.

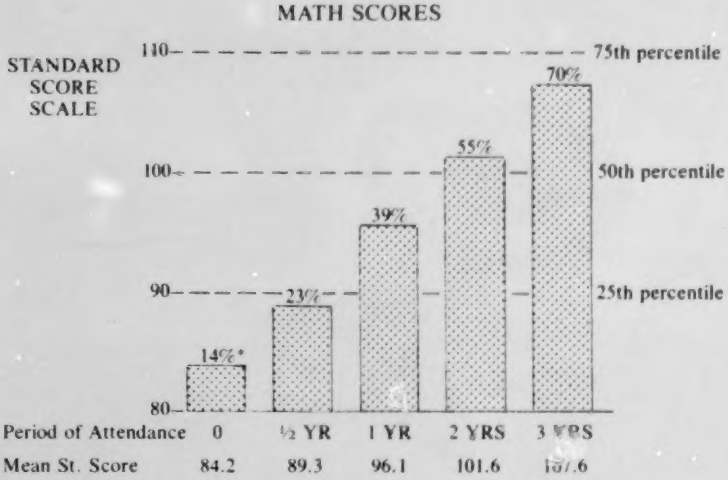
Under these circumstances, the usual evaluation pattern of doing testing all at one time in the fall or the spring would have missed many children and resulted in testing children whose period of attendance prior to the test date had been vastly different. To overcome this difficulty, attendance is kept individually for each child. If the child attends the program for sixty-seven days and is then gone for nine months and comes back, the first day back becomes day sixty-eight. Children are then individually post tested after each interval of 100 days of actual attendance.

For purpose of analysis, the grouping of child tests based on years of enrollment in the program would also have been very misleading because of the uneven and shortened period of attendance within each school year. Therefore, attendance groupings were made to correspond to the equivalent of the normal public school 180-day school year. Thus, the children's tests after 100 days of attendance are reported as "one-half year" since these tests would be the closest to 90 days, which represents half a school year. Other tests were assigned to the nearest school year equivalent of the attendance at the time of testing. It was possible to carry out the analysis for one, two and three years. There were not enough children with the attendance equivalent of four school years or more to carry the analysis beyond three years, so for this study the three year category means three or more years attendance.

Standard scores were used so tests could be combined across age levels, and analysis of variance was then carried out between groups representing differing periods of attendance in the IBI program. Spanish-reading IBI children were compared to children of like grade level in a neighboring school and a t-test was used to measure the significance of difference. When significance is reported, it means significant beyond the .05 level of probability. Analysis of test data in greater detail than could be reported in this paper is available from other sources (McConnell, 1980; 1981).

Findings: Arithmetic

Test scores from the math subtest of the Wide Range Achievement Test are found in Figure 1. Without the bilingual individualized curriculum,



*Numbers above columns are percentile equivalents by national norms

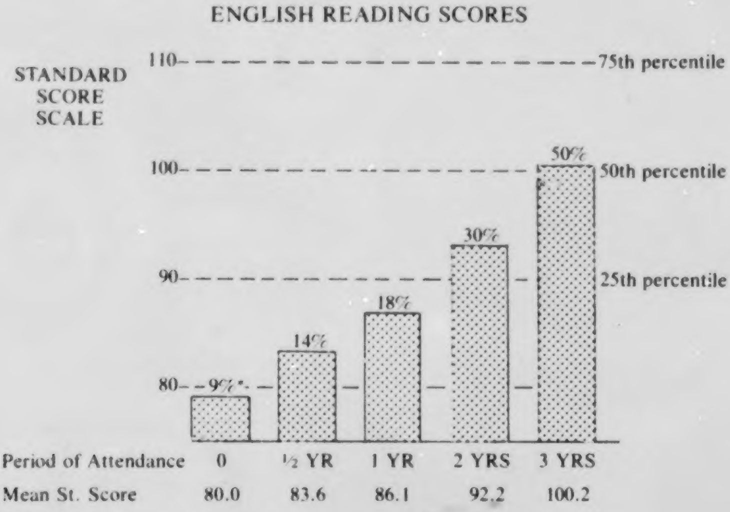
FIGURE 1: Mean standard scores in math on the Wide Range Achievement Test by period of attendance in Individualized Bilingual Instruction progam.

Spanish-speaking migrant children across grade levels had an average standard score of eighty-four, which corresponds to the fourteenth percentile by national norms. Children who had been in the IBI program for 100 days, or about half a school year, had an average standard score of eighty-nine, which corresponds to the twenty-third percentile. Even after this short period of attendance, the superiority of the children in the IBI program over that of the "zero attendance" group is statistically significant. Many school districts who have migrant children can serve them only four or five months. This finding would indicate that even within this time period, the individualized bilingual curriculum can produce significant academic gains.

After attending the IBI program for the equivalent of one school year, the average standard score in math had increased to ninty-six, which is at the thirty-ninth percentile by national norms. After the equivalent of two school years in the IBI program, children had an average standard score of 102, at the fifty-fifth percentile, or slightly above the median score achieved by the English-speaking children with whom this test was normed. Children in the IBI program for three or more years had an average standard score in math of 108, which corresponds to the seventieth percentile, well above national norms.

English Reading

Figure 2 depicts the test scores achieved in English reading as measured by the Wide Range Achievement Test. How children would have done without the program is represented by the zero attendance group, which achieved a mean standard score of eighty. This corresponds to the ninth percentile based on the national norms, which were developed with native English-speaking children.



*Numbers above columns are percentile equivalents by national norms

FIGURE 2: Mean standard scores in reading on the Wide Range Achievement Test by period of attendance in Individualized Bilingual Instruction progam.

After one-half school year, the average standard score had risen to eighty-four—still more than a standard deviation below the national norms, but significantly higher than the children who did not have the program. After attendance equivalent to one school year, the mean standard score had risen to eighty-six, corresponding to the eighteenth percentile by national norms. After the equivalent of two school years the average score reached ninety-two, which would be within the low "normal range", and which corresponds to the thirtieth percentile. After three or more years in the IBI program the children had achieved a standard score of 100, exactly at the national norm of the fiftieth percentile. These findings indicate that it took three years to bring these Spanish-speaking children, initially very low in English reading skills, up to national norms. In math the same children reached national norms after two years, and exceeded the norms by three or more years in the individualized bilingual curriculum.

Spanish Reading

Figure 3 illustrates the findings relative to test scores in Spanish reading, in this case compared to migrant children of comparable grade levels from a neighboring school.

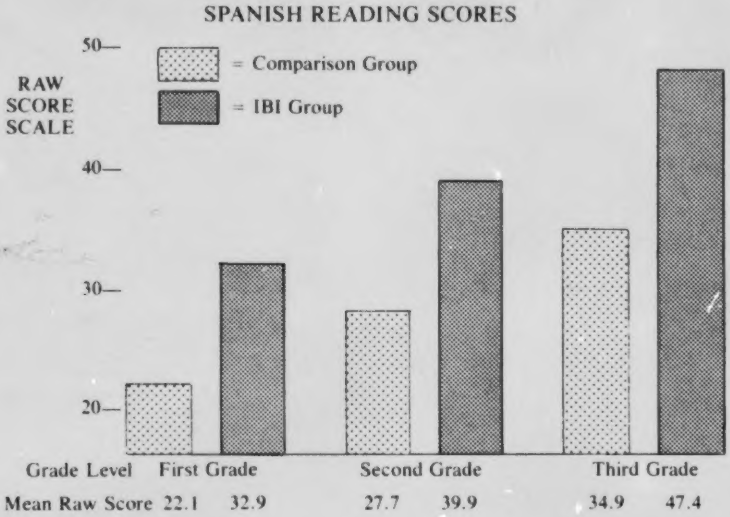


FIGURE 3: Mean raw scores on Prueba de Lectura, Interamerican Series test of Spanish reading, for comparison group and for children receiving Individualized Bilingual Instruction program.

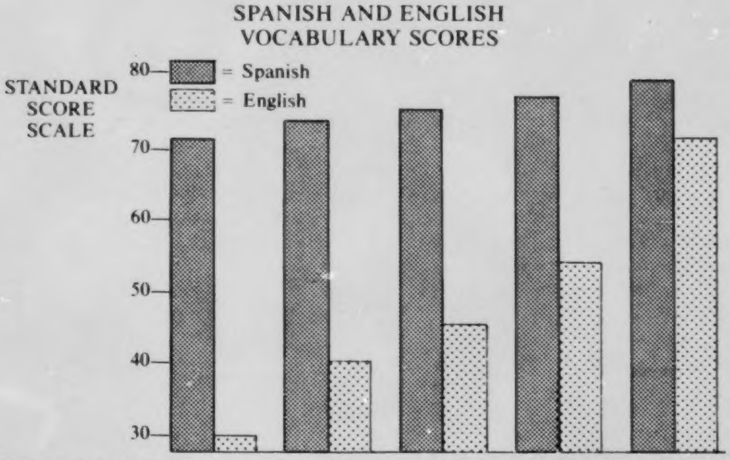
Since this test does not publish standard scores, the analysis reported in Figure 3 uses raw scores and is separately reported for each grade level. The analysis is not based on period of attendance in the program because Spanish reading is not started until children have attended the program long enough to have reached a certain level in the English reading curriculum. Therefore there are not enough children tested at less than two years attendance for statistical analysis at the lower attendance categories. Many IBI children are reading in English at the preschool level, however, so there are children who have started Spanish reading as early as the first grade.

It is clear from the test scores reported that children in the IBI program, who have learned to read first in English, have significantly better scores in Spanish reading than children in the comparison group tested at a neighboring school where instruction is not individualized, and where both Spanish and English reading were started at the same time.

Spanish and English Vocabulary

Figure 4 reports the effect of different periods of attendance in the IBI program on children's vocabulary scores in both Spanish and in English. By showing the development in both languages in the same figure, it is possible to see the relationship between the first and second language over time.

This figure demonstrates that the bilingual program produces very rapid gains in English vocabulary. By three years the children's test scores in English are nearly as high as their test scores in Spanish, and their Spanish has also improved during this time.



Period of Attendance		0	½ YR	1 YR	2 YRS	3 YRS
Mean St. Score	Spanish	72.6	73.8	75.5	77.6	79.2
	English	30.4	40.1	46.8	55.0	72.9

FIGURE 4: Mean standard scores in Spanish and in English vocabulary on the Peabody Picture Vocabulary Test by period of attendance in the Individualized Bilingual Instruction program.

The gain in English is enough to be statistically significant even after attendance of only half a year, and it continues to improve with each additional period of attendance. Vocabulary scores in Spanish also make a small increase for each period of attendance in the program. In Spanish the difference in scores does not become large enough to be statistically significant until two years of program attendance.

The fact that both English and Spanish scores increased is a significant finding. MacNamara (1966) theorized that there was a "balance effect" for children who become bilingual, which meant that as a child acquired a second language there would be a lowered proficiency in the primary language. These findings do not support this theory.

Lambert (1975) proposed a theory as to why becoming bilingual seemed to produce different effects under different circumstances. He used the term "additive" bilingualism for circumstances in which the child's home language is the national language, and is favorably developed by the home. For this child, acquiring a second language would be "additive"—would take nothing away from the first language, would add the second language with accompanying benefits on scholastic achievement and possibly greater cognitive flexibility, and yet other advantages untapped by present research. Children whose first language was a minority language, and whose home circumstances did not foster good linguistic development, were in what he termed a situation of "subtractive" bilingualism—learning a second language might take away from the first language if the child made a language shift. This might lead to lowered scholastic achievement and possibly cognitive deficits as well.

This evidence is therefore important to this debate. It represents a longitudinal study of children from a minority language situation who are learning a second language, English, which is the national language. They come from a home situation that is not associated with good linguistic development. This represents the situation of "subtractive" bilingualism in which Lambert would have predicted negative effects academically and in terms of language maintenance, if children were put into the traditional English-only classrooms. Children in the bilingual program have made very large gains in English; some have shifted to use of more English than Spanish, but Spanish has been maintained and in fact significantly increased. It can probably be said from these data that when Spanish is supported through a bilingual program, the added skills in English seem to have presented no cost to the children in Spanish competence, and certainly no academic retardation.

DISCUSSION

There are still relatively few studies of bilingual education that involve a sufficiently large sample of children and enough years of program operation to present a clear pattern of program effect.

However, the two studies that offer the closest parallel to the IBI program would be those of Rosier and Holm (1980) among the Navajo children in the southwest United States; and by Modiano (1973) among Indian children in the Chiapas Highlands of Mexico. IBI and these two programs all involve students who represent an impoverished, ethnic and linguistic minority. All involve a fairly large sample and an examination of effects over a multiple year period. In addition, each study includes quite a few details on the nature of the curriculum and the background and training of staff. All reported favorable results from the bilingual approach in both language acquisition and in academic subject areas.

The most notable similarity among the three programs was in the recruitment of teachers from the local population. Modiano reported that when they looked for people who could be recruited to teach in the native language, they could find few whose formal education had gone beyond the sixth grade. Rosier and Holm described the native language teachers recruited from the Navajo reservation as "non-degreed" teachers, but indicated that many were working toward degrees. Because of the lack of educational background or prior experience, both of these programs, like IBI, instituted an extensive training program for the teachers. In all cases the studies have stressed that these employees were teachers, not aides. And all three studies have noted that there was a structured curriculum developed for use in the program. The group of children served by all three programs were reported as entering the program primarily monolingual in the minority language.

On some of the other issues of bilingual education the programs differ. The Navajo program hires separate teachers for the two languages and has a planned pattern of transference from greater reliance on the primary language in the lower grades, to greater use of English in upper grade levels. The program in Mexico and the IBI program both have teachers that use both languages, and the teachers switched freely from one to the other in whatever manner seemed necessary to achieve communication.

Both the Navajo and the Mexican programs involved initial reading instruction in the primary language. As noted, the IBI program has taught reading first in English followed by instruction in Spanish, the primary language.

These similarities and differences all raise questions about the circumstances and the program elements that may be most essential to the success of a bilingual program. However, one factor emerges with clarity: It is possible to recruit bilingual teachers from the same ethic and language population as the children served. None of this discussion is meant to imply that there is not a great need for many more well-trained, professional bilingual teachers. It does indicate, however, that the expansion of bilingual education to the many children who need such programs does not necessarily need to be delayed until it can be fully staffed by professional personnel. Paraprofessionals, properly trained and supervised, and given appropriate curriculum materials, can be very effectively used to implement bilingual education, as demonstrated by the IBI program. In this sense there are, as stated in the title of this paper, "plenty of bilingual teachers."

NOTES

1. An annual report entitled "Educational Programs That Work" is published for the U.S. Office of Education by the Far West Laboratory for Educational Research and Development, San Francisco. This includes a description of all programs that have submitted evidence that the program significantly increases children's academic performance, and have had this evidence validated by the Joint Dissemination Review Panel of the Department of Education. The program described in this paper was listed from 1973 through 1978 under the title "Training Migrant Paraprofessionals." Since 1979 it has been listed under its current title "Individualized Bilingual Instruction (IBI)."

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COLLABORATIVE STAFF DEVELOPMENT FOR TEACHERS OF BILINGUAL STUDENTS WITH THE TEACHER AS RESEARCHER

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The notion that classroom teachers are incapable of doing important educational research is a bias inherent to research training programs in many traditional research institutions. Many researchers believe that, save for a few rare individuals, most teachers lack not only the necessary skills but also the proper motivation to formulate and define a researchable question. In this paper we will describe a set of assumptions, goals, and training strategies used to implement a staff development program that tests the notion that teachers of limited-English-speaking students can effectively carry out research pertinent to them. This experiment is currently being conducted as a one-year collaborative research project, funded by the National Institute of Education, between San Diego State University and the Sweetwater Union High School District, a large school district in San Diego county adjacent to the United States-Mexico border. The project includes twenty teachers, sixteen student teachers assigned to them, two university researchers, and two graduate assistants.

Most teacher training and staff development programs fail to take into account the rich experiential background that teachers bring with them to the training situation. This is particularly true of those programs designed for teachers of bilingual and limited-English-speaking students. Most programs focusing on the needs of ethnic minorities lack authenticity. They have been based on an institutional structure that is antithetical to the needs, aspirations and value systems of the populations to be served. An authentic process of eliciting information from those to be served rarely, if ever, has occurred. In other words, basic structures, methods, and ways of doing things have been borrowed wholesale from the majority culture because these ways "fit" into existing institutional frameworks. The "bilingual" or "multicultural" components of the instruction are basically overlays onto existing structures and have been expressed in the form of language usage or the adoption of extrinsic cultural symbols (Cordasco 1975, Zamora, 1972). The process of authenticating educational programs for ethnic minorities implies many changes, the first of which we believe should be to identify problems truly reflective of the populations to be served. We began with the assumption that teachers of bilingual or limited-English-speaking students were themselves the best qualified to determine problems most relevant to research in bilingual settings.

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We were beset by the problem of choosing a model of staff development that would authentically allow teachers to formulate the relevant research questions that should be asked and simultaneously to meet educational expectations of two institutions, the university and the secondary school; and two constituencies, university professors and secondary school teachers. Given these restrictions, a problem-solving approach to staff development was chosen, which rests on a collaborative decision-making management process. The assumptions underlying the implementation of the collaborative decision-making model are:

1. parity in decision making for all participants,
2. respect for the unique perspective of each constituency,
3. equal assumption of responsibility among all participants in the collaborative research and theory development process.

The process of collaboration in this project has two simultaneous cycles. The first occurs between the university and the school district as educational institutions. The second is that between the university researchers and the teachers in the field. In what follows, we will first describe the nature of the training model and its implementation. Secondly, we will discuss the attainment of collaboration and consensus based on existing institutional frameworks.

THE TRAINING MODEL

Theoretical Assumptions

The theoretical underpinnings of this project rest on the pivotal assumption that *teachers should be the agents of their own professional growth*.

The research-training model adopted includes three assumptions designed to create an ambience that provides the emotional support necessary for teachers to be proactive rather than reactive to their instructional situation and problems.

1. Teachers can be encouraged to develop researchable questions by identifying their own strengths and weaknesses in collaboration with their peers. This can be done through:
    a. the systematic observation of other teachers teaching;
    b. analysis of the data collected during the observation of other teachers teaching;
    c. discussion among teachers about the analysis of their findings;
    d. application of their findings to solve instructional problems;
    e. modification of solutions through trial and retest of their hypothesis.
2. Involvement in the process of carrying out instructional research:
    a. enables teachers to perceive the strengths and weaknesses of other teachers during the instructional process;
    b. allows the teacher to identify those teacher behaviors which consistently work well during the instructional process;
    c. makes teachers capable of solving their own problems and acting as agents of their own change;
    d. makes teachers more capable of communicating solutions to problems to their colleagues.

3. University faculty and classroom teachers collaborate in seeking strategies to find solutions to teachers' problems.

The role of university faculty in this process has two focal points. The first is to facilitate the establishment of *collaborative* or *collegial relationships*—first among the teachers as a group and secondly between the individual teachers and the student teachers assigned to them. Collaborative or collegial relationships refers to a climate of cooperation and a style of research-like behavior that the professors and teachers attempt to create and perpetuate during the entire time that the research project is underway. The establishment of collegial relationships involves building and maintaining trust, credibility, and reciprocity in relationships among teachers, teacher educators, district evaluation teams, and others involved in the project.

The second pivotal role of university professors is to establish and oversee a process of *documentation*. The purpose of documentation is to set up a systematic method of collecting evidence, of authenticating facts, and verifying claims and opinions in order to support inferences drawn from evidence.

Student teachers have been assigned to work with project teachers for five reasons:

1. We assumed that observation of relative novices in the field would allow project teachers to identify basic instructional problems quickly and easily.
2. Project teachers could gain needed practice in systematic observation by first observing student teachers before going into the field to observe their peers.
3. Master teachers would be put into a process of examining their own personalities, teaching styles, and beliefs, relating to instruction, as they attempt the very difficult task of trying to help student teachers solve instructional problems in bilingual classrooms.
4. Student teachers, once underway, would allow the master teacher some release time to reflect on his/her research problem and to learn skills to find solutions to these problems.
5. University professors, working closely with *both* master teachers and student teachers, would be able to collect ethnographic data about the needs of bilingual teachers in the field relevant to preservice bilingual teacher training.

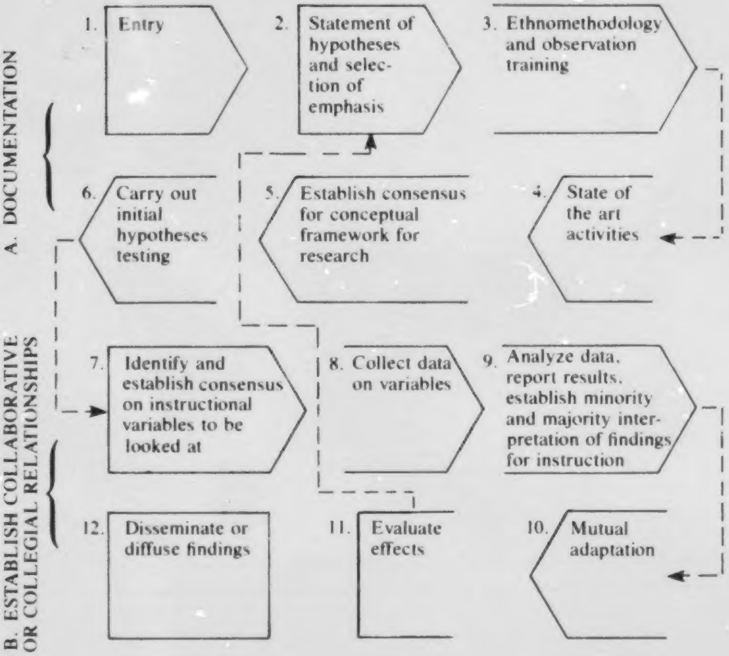
Training Strategy and its Implementation

The overall discovery model of learning rests on a twelve step process outlined in Figure 1.

Notice that the processes of collaboration and documentation continue throughout the total life of the project. The steps within the model depict a systematic approach to the discovery of solutions to the problems or questions identified for study. This figure represents an idealized heuristic for research that also guides the training process of the teachers. The first three steps (entry, statement of hypotheses and selection of emphasis, ethnomethodology and observation training), were initially covered during a thiry-two hour workshop held the week before school began in August 1980. This workshop was conducted on site at the district offices.

FIGURE 1

A CONSENSUS COLLABORATIVE RESEARCH MODEL FOR ADAPTATION OF RESEARCH FINDINGS.


A. DOCUMENTATION
B. ESTABLISH COLLABORATIVE OR COLLEGIAL RELATIONSHIPS
1. Entry
2. Statement of hypotheses and selection of emphasis
3. Ethnomethodology and observation training
4. State of the art activities
5. Establish consensus for conceptual framework for research
6. Carry out initial hypotheses testing
7. Identify and establish consensus on instructional variables to be looked at
8. Collect data on variables
9. Analyze data, report results, establish minority and majority interpretation of findings for instruction
10. Mutual adaptation
11. Evaluate effects
12. Disseminate or diffuse findings

The initial training of the teacher/researchers used the clinical supervision method developed by Boyan and Copeland (1978). It was chosen because:

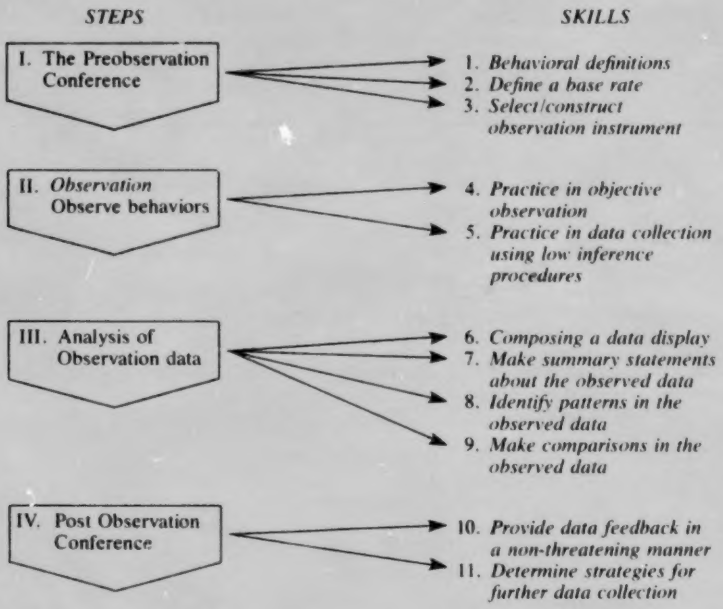
1. the communicative style inherent in this training is compatible with the three basic assumptions of collaboration;
2. it is practically relevant to teachers in their new roles as teacher trainers;
3. it incorporates strategies and skills necessary for undertaking educational research.

This training method focuses on developing effective interpersonal relationships, clear communication, problem definition, systematic classroom observation and analysis as well as objective feedback on the student teacher's teaching performance. The idea was to enable participants to develop many of the same skills needed later to carry out an actual research project through a process of transfer.

The strategy involved is comprised of four sequential steps and their concurrent skills (see Figure 2).

FIGURE 2

CLINICAL SUPERVISION TRAINING MODEL


STEPS
SKILLS
I. The Preobservation Conference
1. Behavioral definitions
2. Define a base rate
3. Select/construct observation instrument
II. Observation Observe behaviors
4. Practice in objective observation
5. Practice in data collection using low inference procedures
III. Analysis of Observation data
6. Composing a data display
7. Make summary statements about the observed data
8. Identify patterns in the observed data
9. Make comparisons in the observed data
IV. Post Observation Conference
10. Provide data feedback in a non-threatening manner
11. Determine strategies for further data collection

Within these four steps teachers practice skills directly related to experimental or quasi-experimental educational research.

Step I: 1. Practice in defining the instructional problem of the student teacher in behaviorally observable terms. This process is the same as that known in research as "operationalizing variables" and defining the problem through generating testable hypothesis.

2. Setting a base rate or criterion. This is the process of suggesting desirable behaviors or solutions to solve the problem outlined in number one above and aiming for a level of change of these behaviors if criterion is not reached;

3. Selection or construction of an observation instrument. This is the process of finding or constructing checklists, or other instruments for the purpose of objectively mirroring specific behaviors in the classroom related to the instructional problem defined in number one above. This process in educational research is more general and includes such instruments as achievement tests, survey questionnaires, attitudinal questionnaires, etc.

Step II: The process of observation itself is one that requires practice.

Teachers had the opportunity to observe classroom interaction on film and to observe the same situation using similar instruments. Problems of interrater reliability were discovered through this process.

Step III: Analysis consists of practice in analyzing data collected by observation and interpreting it for purposes of maintaining or identifying classroom behaviors that should be changed. This is the process in educational research of statistically analyzing numerical data and relating it to the original hypothesis tested.

Step IV: Post observation conference gave project teachers practice in relating the results of observation analysis and interpretation to the student teacher, with the objective of determining strategies for improvement of student teacher interaction. This step is an analog of the researcher writing and publishing the results of his/her research in professional journals and the inclusion of further research needed on a problem.

Building Collaborative Relationships

During the initial phases of the project when the twenty teachers were undergoing the clinical supervision training, the consensus model was explained to them in detail. The major purposes of the clinical supervision training were:

1. to give the teachers practice in working with another person in the improvement of the instructional process. They worked with each other in preparation for working with a student teacher,
2. the building of trust and communication skills among the teachers as a group and with the professors,
3. to give the teachers practice in the selection and description of researchable questions,
4. practicing construction of classroom observation instruments and collection of data.

Working Toward Consensus

As part of the collaborative research model for staff development, the team of two professors and twenty secondary school teachers attempted to come to an overall consensus regarding the topics to be researched. This was done through biweekly group discussions about research questions interesting to the teachers. The teachers requested that copies of the proposed model be placed at each of the six school sites so that they could better familiarize themselves with the overall project plan. They also wished to get clues about pertinent questions that should be asked.

The university professors visited each school site at least once per week to supervise student teachers; do simultaneous observations of student teachers together with the master teachers; coach master teachers in the observation process; practice reaching interrater reliability during classroom observations; and to discuss master teachers' research topics. At schools with more than one project teacher, an attempt was made to meet with all of them in a small group.

These activities in the schools have not been perceived as disruptive inasmuch as the professors were normally expected to be at the schools in their usual role as supervisors of student teachers. Project activities were thus unobtrusively integrated into the normal flow of school activities.

Characteristics of Project Teachers Selected

The process of participant selection, when working across institutions, is usually very time-consuming. For some programs this process has taken up to six months, particularly when start-up dates of the funding agency do not coincide with school district and university academic calendar years. Because this project was originally scheduled to be funded in July 1980, it was important to begin the process of teacher selection in April 1980 before teachers left for summer vacation. This is particularly true since initial training was to begin in August *before* classes began. From April through June 1980, university professors met with principals, assistant principals and counselors at each site to explain the project and to gain their acceptance of the project for their teachers. Follow-up meetings were held with interested teachers. The teacher role and responsibilities in the project were thoroughly explained and outlined in writing. This process yielded a list of seventeen teachers in four schools who were willing to make a commitment to the project. The essential criteria for acceptance into the project were three fold:

1. the teacher had to be willing to make a year-long commitment to the project;
2. the teacher had to express interest in doing research;
3. the teacher had to be working with limited-English-speaking students.

Because there was a delay in notification of funding, district personnel and university professors made the decision August 4, 1980 to begin the project on district and university funds. Of the seventeen teachers originally committed to the project, six were still available for training in August. Of the eleven who could not continue, four had a change in status e.g., transferred to other school, promoted to counselor, or took a leave of absence, five felt the project too strenuous given other commitments, and two withdrew because of a nonsupportive principal.

During the first part of August, additional intensive recruitment of teachers was undertaken. All teachers recorded as being present at any of the orientation meetings were contacted. Seven of them who had not been ready to make a commitment in June agreed to participate. An additional three teachers transferred into the collaborative research project from an onsite masters program. Four more came from schools or assignments not originally targeted for the project. These teachers were allowed to participate because they had had experience doing research; they were bilingual and were working with bilingual or limited-English-speaking students.

Through this process, twenty teachers from six schools were selected. Table I shows the subject areas, bilingual certification and years of experience for each of the project teachers.

Of the twenty teachers who were selected to participate in the program, six already had master's degrees and four of these were already at the top of the salary scale. At least two of the teachers in the project hold Phi Beta Kappa keys and two are former Fulbright scholars.

TABLE I

SUBJECT AREA, BILINGUAL CERTIFICATION, AND YEARS OF EXPERIENCE FOR PARTICIPATING TEACHERS

Subject Area	Number of Participants	Bilingual Certification	Years of Experience 1-3	4-9	10 or more
ESL	4	4	2	1	1
Math	4	2	0	2	2
Social Studies	7	6	2	1	4
Business	1	0	0	1	0
Spanish	2	2	1	1	0
Science	1	0	0	0	1
Tagalog	1	1	0	1	0
Total	20	15	5	7	8

Of the twenty participating teachers, fifteen hold bilingual certification, five have one to three years of teaching experience, seven have four to nine years of experience, and eight have ten or more years of teaching experience. Seven subject areas are represented in the group. Two of the five teachers with one to three years of experience work as substitute teachers for the school district. Three of the teachers are second-year teachers. Half of the teachers with ten or more years of experience had in previous years supervised student teachers. The other four in this category had never had or requested a student teacher. Two of the regular classroom teachers in the project could not be assigned student teachers because we were unable to match student teachers with master teachers for one of the math teachers and for the Tagalog teacher.

In summary, the process of selection produced a cadre of twenty teachers across six school sites. In no case does the number of teachers at any site compose a "critical mass." Teachers vary greatly in years of teaching experience and in experience with research and innovative programs.

ATTAINMENT OF COLLABORATION

The notion of collaboration among teachers working toward objectives in the educational enterprise is not a new one. Team teaching is an example of a type of collaboration advocated in several bilingual models of instruction. In this project two types of collaboration were being advocated simultaneously. The first was between master teacher and student teacher in which the master teacher was to act as a facilitator and emotional support for problem solving on the part of the student teacher rather than as a critic or evaluator. The second process of collaboration was among the teachers themselves in their attempts to solve problems through consensus decision making and doing research on identified problems. Our descriptive research in these areas rests on the following questions:

1. To what extent did teachers implement the clinical supervision model?
2. What were the reasons for success or failure in implementing the clinical supervision model?

3. To what extent did the clinical supervision model act as a base for transfer of skills to the research questions identified?

Insights about the nature of the answers to these questions are based on our weekly observations of the relationships that developed between master teacher and student teacher during the entire first semester, records of the interaction between master teacher and student teacher during the post observation conferences, and ethnographic interviews of both student teacher and master teacher separately during the course of the semester.

During the first four weeks of implementation we noticed that no master teachers had begun to implement the first step of the process. On analysis of our data at that point we hypothesized that the student teachers, on initial entry into teaching, were not ready to cooperate in Step I of the procedure. The clinical training model has as its underlying assumption the notion that the teacher in training will freely discuss his/her problems in instruction with the master teacher or supervisor. University professors, acting as supervisors of student teachers, observed that:

1. Three student teachers were having problems with such things as pacing of the class, classroom control and adequate lesson planning, but that the student teachers in question did not themselves realize the problems, though the master teachers did.
2. Even when student teachers did realize they had a problem, they tended to discuss it with other teachers in the school, rather than with the master teacher or university supervisor.
3. All master teachers were reluctant to begin observations until student teachers had come to them with a problem.

Thus, implementation of procedures learned in the clinical observation training were not being utilized.

The university professors initiated action by beginning observations using an anecdotal method even though no problem had been expressed by the student teacher. Then both the university supervisor and the master teacher would attend the post-observation conference. In this process, university professors were acting as models for master teachers by demonstrating roles for interacting with student teachers using the objective data gathered from the observation process. After the first three weeks of this process the professors, by observing student teachers teach and by observing the relationship between master teachers and student teachers, redesigned the supervision model to include some important preliminary steps. Observations were made using the anecdotal method of recording classroom interaction. In this method, the observer records as much of the student-teacher interaction as possible. The time at which things are happening is recorded resulting in a sequential descriptive record of the teachers interaction with the class. It is important that no evaluations be made using this method; judgmental language is avoided. The goal is to mirror the student-teacher interaction and record this on paper. Much of the focus of these observations was on student behavior.

The flow chart displayed in Figure 3 was developed to assist teachers in clarifying the procedures in the revised clinical supervision model. Effective length of time for each observation appears to be about twenty minutes for most classrooms.

Readiness of teachers to implement clinical supervision

When the revised model for clinical supervision was presented toward the end of September 1980, several things had happened. First, two second-year teachers had experienced difficulties adjusting to the new role of master teacher. In the first case, difficulties adjusting to a role had been aggravated by a nonsupportive principal. In the second case, the master teacher was not able to isolate herself from a tendency to make judgments about her student teacher's performance, this being contrary to the model. This teacher was not able to simply record the facts objectively and allow the student teacher to make the judgments. Instead, this teacher identified for the student teacher all problems she felt the student teacher was having and offered many solutions for the problems she had identified, rather than eliciting the problems from the student teacher. For these two second-year teachers, it was necessary to reassign the student teacher to another more experienced teacher. Second, one of the more experienced teachers had dropped out of the project because of time commitments to a new project.

Implementation of the process shown in Figure 3 succeeded in getting all project teachers started in the observation process. However, the actual hammering out of mutually agreed upon instructional problems between master teacher and student teacher and the production of observation instruments by the master teachers was singularly unimpressive. Of the sixteen teachers in the project only three ever made it to the collection of data through instrumentation. In attempting to discover the possible reasons for the less than adequate implementation of the model we have formed the following hypotheses:

1. The Boyan and Copeland Model is theoretically and practically inadequate to promote collaborative relationships among teachers.
2. Even if this model is revised and adopted "mistakes" in the "match" between master teacher and student teacher will result in less than a collaborative relationship.

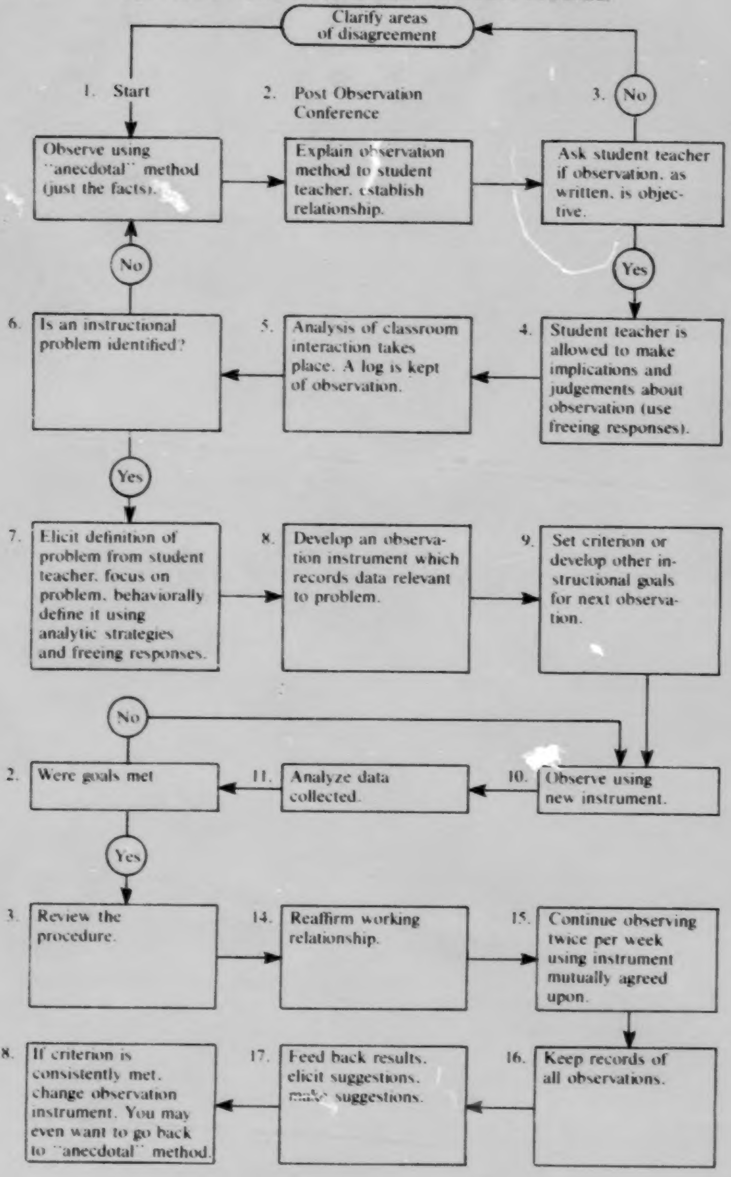
Theoretical and Practical Inadequacy of Boyan and Copeland Model

From the analysis and reanalysis of the observational and interview data we have gathered *vis-à-vis* the characteristics of the model, we have tentatively hypothesized that the Boyan and Copeland Model is inadequate because it is an incomplete attempt to simultaneously combine assumptions and communication techniques based on ethnographic methodologies with research based on psycho and sociometric techniques. We tentatively hold that this incomplete eclecticism may cause confusion among the teachers trying to implement the entire strategy.

Secondly, we hypothesize that the strategy becomes unworkable because student teachers expect to be evaluated given the university requirements of teacher training. Unless they learn, through training, their part of the communication "script," the collaborative process cannot really begin.

Thirdly, we suspect that collaboration between master teacher/student teacher, given any strategy, will occur only when there is a "match" between the two. We did not consider this problem in our original documentation plan for the program so we cannot say what the crucial elements of the "match" might be. Tentatively, we think it may have something to do

FIGURE 3
REVISED CLINICAL OBSERVATION MODEL


Clarify areas of disagreement
1. Start
2. Post Observation Conference
3.
No
Observe using "anecdotal" method (just the facts).
Explain observation method to student teacher, establish relationship.
Ask student teacher if observation, as written, is objective.
No
Yes
6. Is an instructional problem identified?
5. Analysis of classroom interaction takes place. A log is kept of observation.
4. Student teacher is allowed to make implications and judgements about observation (use freeing responses).
Yes
7. Elicit definition of problem from student teacher, focus on problem, behaviorally define it using analytic strategies and freeing responses.
8. Develop an observation instrument which records data relevant to problem.
9. Set criterion or develop other instructional goals for next observation.
No
2. Were goals met
11. Analyze data collected.
10. Observe using new instrument.
Yes
3. Review the procedure.
14. Reaffirm working relationship.
15. Continue observing twice per week using instrument mutually agreed upon.
8. If criterion is consistently met, change observation instrument. You may even want to go back to "anecdotal" method.
17. Feed back results, elicit suggestions, make suggestions.
16. Keep records of all observations.

with the participants' attitudes or perceptions about what good schooling should be, what the proper role of the teacher should be *vis-à-vis* the students, and what constitutes standards of excellence for student evaluation.

In spite of these difficulties, teacher evaluation of the clinical training process averaged between 4.7-4.9 on a three-factor instrument (scale 1-5). All teachers with past experience as master teachers reported they wished they had received such training prior to their first experience with a student teacher. All participants said they would recommend the training to their colleagues as preparation for becoming a master teacher.

Though most teachers did not get to the point of designing instruments for student teacher feedback, they all succeeded in giving feedback through the anecdotal method. Fourteen of the sixteen master teachers were very receptive to the feedback given them in this manner. Only one of the teachers was reluctant to receive a student teacher for the following semester.

Did the clinical supervision training transfer to the doing of research? Did it aid the establishment of collaboration among the teacher/researchers? Insights into these questions will be integrated within our discussion of the attainment of consensus among the group.

ATTAINMENT OF CONSENSUS

By the middle of November 1980, we realized that given the time restrictions of the project, it was not possible to attain a full consensus framework for the conduct of a single major research problem concerning the nature of bilingual/multicultural instruction in the district. Instead, individual teachers or small groups of them would produce a series of mini-studies relating to limited-English-speaking students.

Insights as to why overall consensus was not achieved may be related to the following facts:

1. Thirteen of the twenty teachers had a very difficult time selecting a researchable question. One of the restrictions most often cited was lack of enough time to reflect adequately on the problem.
2. There was a tendency on the part of three teachers to lean on the examples of research questions illustrated in the proposal itself.
3. Three of the teachers who identified separate research questions attempted, to no avail, to interest some of the other project teachers in their research. Then, all subsequently recruited teachers from outside the project as partners in their research.
4. Four teachers have shown some reluctance to collaborate. One major difficulty to collaboration was differences among teachers in subject area and knowledge background.
5. Another major difficulty was communication on a regular basis across school sites. Collaborative research teams have only developed among project teachers working in the same school.

All of these things tended to work against the development of a total group consensus framework for carrying out research. Instead, teachers selected research topics in groups of three, dyads, or as individuals.

The following descriptions show the nature of the problems researched at each school site. At one high school, three teachers in the subject areas math, government, and social studies identified their research question within the first two months of the project. This team was formulated early because all three teachers had strong feelings that "their school" was characterized as a "remedial school" and that many students in the school were erroneously labeled as "remedial." In addition, one of the teachers showed strong leadership skills. They collected empirical data reflecting the attitudes of teachers, administrators and students about their "school climate." This team was able to meet regularly during third period.

At another school, three teachers in the subject areas math, Spanish, and social studies had a difficult time in formulating a researchable question. They were able to agree on the general nature of their research problem within the first month of the project, but had difficulty coming to an agreement about how the research could be done. Their research question contained three parts: (1) a description of student motivation, (2) a description of teacher attitudes, and (3) a description of parental attitudes as they relate to student success and exit from the bilingual program. They chose a combination of the ethnographic interview and psychometric techniques as the methodology for their study.

At a third school with four teachers, each participant worked on a separate research topic. One teacher had her project clearly defined upon entry into the project and had already done some work in the development of a language test for the placement of limited-English-speaking students; another is the only business teacher in the project and is interested in how teacher leadership style affects learning; the third teacher initially found it difficult to collaborate with others in the project but another of the more experienced teachers at another school finally was able to interest her in working together on some aspects of individualization. However, they worked on separate research projects. A fourth teacher at this school dropped out of the project shortly after completing the first phase because of time constraints.

Five teachers at another site have met regularly throughout the implementation phase of the project. One teacher was looking at Adlerian theory and how it affects school achievement for Mexican American students; however, he dropped out of the project due to family illness. The others worked on separate projects. These projects dealt with family background influences on individualization, the selection process of Mexican American students for college prep math and science course, and the process of acculturation among recently-arrived Filipino students. All teachers at this site chose an ethnographic methodology.

In the two schools that have only one project participant, the teachers worked on individual projects. One of them recruited another teacher to help her study the relationship between different modes of instruction for bilingual students and achievement. The other experimented with differential genres of writing as a means to enhance motivation and achievement of junior high school students in social studies.

Only one teacher selected a research problem directly related to student/teacher interaction, even though the clinical supervision and the development of the master teacher-student teacher relationship strongly emphasized this. Instead, the rest of the teachers selected problems relating directly to institutional organization within the school and/or home background variables of the students that teachers feel prevent students from achieving academically.

Lastly, two teachers conducted action research through a program they developed to train parents to observe bilingual classrooms.

The questions teachers chose to ask regarding bilingual/multicultural education in their schools bear only slight resemblance to those posited in the project proposal. These bilingual teachers were more concerned with the nature of the family and its influence on the success of current educational practices (e.g., individualization), the attitudes of teachers toward the ethnic student, the practice of student selection and placement (e.g., for ESL classes and college prep math/science) than in the interaction between students and teacher within individual classrooms. For most of these questions, ethnographic rather than psychometric or experimental paradigms were chosen. Under these conditions the question of transfer of "research" skills from the clinical supervision training is irrelevant because such skills are for the most part irrelevant to the types of questions the teachers were asking.

Only four of the teachers really refused to collaborate. Three even recruited collaborators when none could be found within the project group. Total collaboration proved to be unfeasible because of situations beyond the participants' control, such as wide dispersion of teachers across schools, the heterogeneity of the participants in subject matter interests, teaching experience and past experience doing research.

Perhaps the most important outcome of this research project is the documentation of the questions that bilingual teachers themselves deem important areas for research. Of equal importance will be the implications for bilingual preservice teacher traning coming out of the difficulties, and successes documented for the master teacher/student teacher relationship.

Part II

MEASUREMENT AND EVALUATION/ MEDICIÓN Y EVALUACIÓN

Le preguntaron a don Catarino, "¿Cuántos barriles
de agua contiene el lago de míchigan?"
"Pos," contestó mientras meneaba las matas de pepino,
"depende de que tamaño sea el barril. A la mejor es uno."

ED212149

THE ASSESSMENT OF LANGUAGE PROFICIENCY IN BILINGUAL CHILDREN: AN ANALYSIS OF THEORIES AND INSTRUMENTATION*

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As the test maker begins the process of designing a test, the first concern to be reconciled relates to the content to be tested. The tester must examine the subject thoroughly to determine the topics and tasks which it encompasses. In the field of language proficiency these topics and tasks all deal with the nature of language and language usage. Throughout this century the linguist has described language in terms of three components or topics: phonology, syntax, and lexicon. The tasks of language usage are organized around two genres: the skills used to communicate or receive information, such as listening, speaking, reading, or writing, and the settings or sociolinguistic domains in which the language is used. Together, these constituents form a tripartite theory—a set of constructs that is used in the design of a language proficiency test. We will describe each constituent in greater detail.

The linguistic components of language, or levels, as Lado (1961) referred to them, are phonology, syntax, and lexicon.[1] Phonology encompasses all the sounds of the language; that is, the basic phonemes or sound segments, and their variations which are called allophones. It also encompasses the suprasegmental phonemes of stress, pitch, and intonation.

Syntax is that part of language which conveys the relationship that exists between words in a sentence. It is often called the backbone of the language. It can be illustrated in the following examples.

1. The teacher considered Johnny poor.
2. Johnny considered the teacher poor.
3. The teacher considered poor Johnny.
4. Poor Johnny considered the teacher.
5. The poor teacher considered Johnny.

Although each sentence consists of the same five words, its meaning differs because the syntax or word order differs. Thus, syntax is used to express simple and sometimes complex relationships between environmental phenomena that are labeled with words. Morphology, words or parts of words that express grammatical meaning, is also considered part of the syntactic component of language. Morphology includes free morphemes, such as the past tense marker *did*, and bound morphemes, such as the plural ending *s*

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in the word *cats*. Obviously, free morphemes can stand alone as a single word in an utterance, whereas bound morphemes only have meaning when attached to a word. Languages differ considerably in the extent to which they depend on morphology or word order to express relationships between words. For example, English depends more heavily on word order while Spanish and other languages derived from Latin depend more heavily on morphology. Thus, the relationship between nouns and modifiers in the Spanish sentence "*Los coches y las casas son amarillas y negros*," is clear, while ambiguity in the English sentence "The cars and houses are yellow and black," can only be clarified through the appropriate use of syntax, i.e., "The cars are black and the houses are yellow."

The lexicon of a language is simply the words or vocabulary that is used to label environmental phenomena. Since the number of words that exist in a language is very large, a distinction between active and passive vocabulary is sometimes made in testing. The words in a language may have both denotative and connotative meanings, and fill both lexical and/or grammatical functions. For instance in the sentence "*The boy spoke to the girl*," the word *boy* is both the subject and a label used to refer to a young male human being. Words often carry semantic constraints that are determined by the culture or the environment. Thus, in the previous sentence, the verb *to speak* is only used to refer to the form of communication used by humans. These constraints can play a role in test design in that they vary across languages. Thus, if a limited-English speaker used the word *speak* to refer to the barking of a dog, this would probably be considered as indicating a deficiency in the lexicon.

The second constitutent of the tripartite theory is communicative skills. This means the four fundamental skills by which communication is realized: listening, speaking, reading, and writing. Just as within the language level constituents described above, it is expressly understood that proficiency in one of these skills does not entail proficiency in the other. Indeed, it is possible for one to be able to have well-developed listening skills only, listening and speaking skills only, reading skills only, reading and writing skills only, listening and reading skills only, listening, speaking and reading skills only, or just about any other combination of these. For the purposes of testing the language proficiency of bilingual children, the skills that are generally of concern are those of listening and speaking, since the acquisition of reading and writing skills is not yet complete in either language. Nonetheless, these graphic skills might also be included in the language proficiency assessment from the third grade on.

The addition of communicative skills to the content of a language proficiency test complicates the matter considerably. It means that the linguistic components described earlier must now be measured via four different communicative skills if the test is to fully sample topics and tasks. Thus, for phonology, it will be necessary to test phonology in listening, speaking, reading, and writing. For listening, this might be done via minimal pair sound discrimination tasks where the subject indicates whether two words are the same or different, i.e., fit vs. feet. For the speaking skill, it might involve the repetition of such a pair, in a manner in which the difference is distinguishable. For the skill of reading, the phonology component may be tested through the recognition of correct sound-letter correspondences. For instance, the student upon hearing the word "house" may choose the correctly spelled word among three similar versions given (hose, house, whose). For phonology within writing, we may ask the student to write the word. Similar item formats can be devised for the syntax and lexicon by communicative skill. At this point we see that the analysis of language and language usage has created the possibility of twelve separate subtests; three linguistic components within each of four communicative skills.

The third constituent of the tripartite theory is sociolinguistic domain. Domain is a sociolinguistic construct that refers to the regularities in language and language function found in similar social situations. The concept of domain is also related to the concept of *diglossia* (Ferguson, 1959), which refers to the situation wherein a speech community uses two languages to communicate. Theoretically, each language is reserved for specific situations.

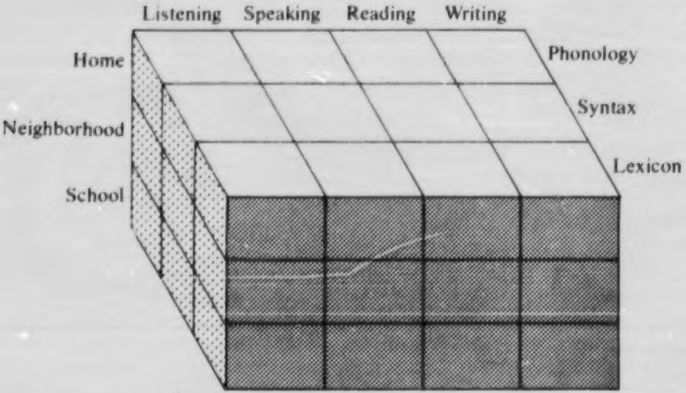
Domains may vary from one bilingual society to another. Thus, in one society it may be possible to identify a *religion* domain, while in another society it may be possible to identify a *government* domain. Strictly speaking, the existence of a domain must be proven by extensive participant observation of speakers in numerous social settings. The data collected is then subjected to statistical analysis to determine if there are significant differences in the propensity to use a specific language in a specific setting. After gathering data for over a year on the language choice of bilingual Puerto Ricans in New York, Greenfield (1968) was able to identify five domains from the innumerable situations he observed. These were family, friendship, religion, education, and employment.

Sociolinguists find it useful to distinguish between two varieties of language. These have traditionally been called High (H) and Low (L), although recently the valueless terms A and B have been used. The high variety may include the domains of school, church, professional work sphere and government, while the low variety may include family, neighborhood, and lower work sphere. The high variety has often been associated with a status stressing factor, whereas the low variety is often associated with an intimacy factor. Greenfield found that in speaking to other bilinguals, Spanish is used in the family and friendship domains, while English is used and associated with religion, work, and education.

Sociolinguists also have related language choice for a specific domain to language proficiency in that domain. Edelman, et al. (1968) found that for Puerto Rican children the most disparate domains on a word-naming task were family and school. Family produced the most Spanish responses and school produced the most English responses. In another study involving adult Puerto Ricans, Fishman and Cooper (1971) asked their subjects to name as many different words as they could in one minute that refer to the domains mentioned above. Thus, subjects were asked to name articles found in the home, objects found in their neighborhood, objects found in a church, in a school, and jobs and professions. After naming them in English, the subjects were asked to respond in Spanish. While the total number of responses given in both languages was equal, indicating that the subjects were balanced bilinguals, significant differences were found in the English and Spanish scores across domains. Again, Spanish scores were highest for home and English scores were highest for education. As they later pointed out (1978), "The word-naming task revealed important proficiency differences which would have been completely hidden if a global undifferentiated measure had been used." Thus, sociolinguistics has added a third constituent to language proficiency measures, that of sociolinguistic domain. Inherent in the construct of sociolinguistic domain is the belief that a child's language proficiency will vary according to social context. Thus, a valid assessment of language proficiency must include language tasks in different social domains, and ideally, subscores for each domain. Since the domains of government, religion, and employment are not particularly relevant to the settings in which preschool and elementary school children use their language skills, test authors limit their consideration of domains to home, neighborhood, and school. In reality, the existence of only home and school domains have been validated for children through research.

This model of language proficiency is depicted in Figure I. As can be seen, the figure portrays a thirty-six cell matrix. Each cell in the matrix represents a distinct measurement domain. For example, we could test listening comprehension of each linguistic component (phonology, syntax, and lexicon) in the home setting. Likewise each component can also be tested for usage in the other communicative skills of speaking, reading and writing. We have already stated that it is assumed that each cell represents relatively independent language skills. Therefore, ideally each cell should be tested separately and an appropriate subscore obtained.

FIGURE I



While idyllic, the magnitude of such an approach to testing ignores the fundamental consideration of practicality. Therefore, in reality we must take into account that no test will be as thorough as the idealized model presented here. Nonetheless, the matrix is useful in judging the validity of an instrument. Thus, as a general rule, the more cells we find included in a test, the greater its validity.

Concurrent with the addition of sociolinguistic domains to language-testing models during the 1970s, theories of linguistic analysis moved in a new direction. For the first time, linguists began looking at the functions of language as a vehicle of communication. This study of language functions became known as "pragmatics." The philosopher Morris (1938) was the first, in recent times, to discuss pragmatics. He described it as those aspects of language that involve both the user and the context of use. He portrayed it as another level of language like phonology, syntax and lexicon. We will use it as such in this paper, as a fourth level of language.

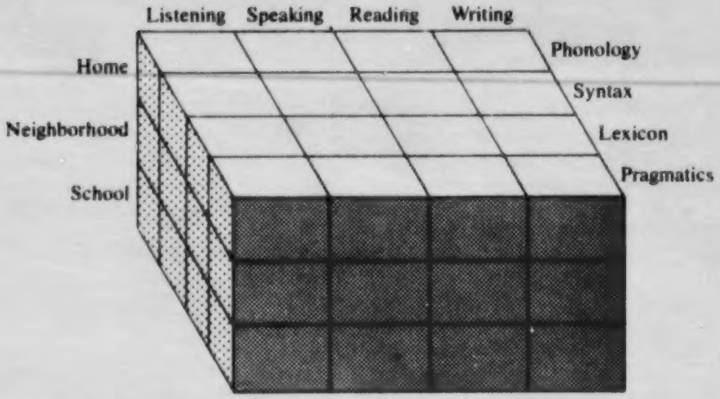
The motivation for the study of pragmatics among contemporary linguists comes from a book entitled *How to Do Things with Words*, by British philosopher, J. L. Austin (1962). Austin observes that sentences perform various kinds of functions. These functions are often expressed by gerunds. Some examples of the functions of language are: describing, asking, informing, warning, apologizing, ordering, stating, relating, begging, convincing, reprimanding, etc. These functions are considered classifications of social behavior that is acted out through the use of words. The speaker expects that the verbal behavior will have an effect on the listener, who will correctly interpret it and act accordingly. For example, the expression "I'm sorry" is a type of verbal behavior that is intended as both an apology and as a request for forgiveness. The request for forgiveness is implied from the statement, even though it is not part of its literal meaning. The roles of implied meaning and inference are central to an understanding of pragmatics.

Sometimes language functions are expressed in direct fashion. An example is the imperative, "Put on your shoes." At other times, the same function is expressed indirectly, through a statement such as "I wish you'd put on your shoes." Depending on the context and the relationship between the speaker and the listener, the particular "speech act," as it has been called (Searle, 1969), can be very indirect. In order to effect the desired listener behavior, one might even say, "Haven't you forgotten something?" or "The pavement is hot." In the case of such indirect speech acts, the meaning of the statement cannot be derived by analyzing the sentence alone. The sentence can only be understood in reference to its context. This requires that the listener interpret the implied meaning or function of the utterance. This relationship of context to utterance is also central to the notion of pragmatics.

Test authors have been influenced by the concept of pragmatics in different ways. Some tests merely try to establish a context to the desired speech through a visual image of some kind. Others actually focus on language functions such as asking, describing, naming, ordering, etc. In the loose sense of the word, any test that established a context which the examinee must take into account when speaking, can be considered a pragmatic test. In the strict sense of the word, only those that systematically examine the student's ability to perform speech acts such as those described above, are pragmatic tests. Thus, it would be possible to develop a test based on language functions for separate sociolinguistic domains and for the different communicative skills. Although such tests have not yet appeared, there have been some efforts in this direction. One curricular advantage they offer is that they could be interpreted diagnostically, in addition to providing a proficiency level.

The addition of pragmatics as another level or component of language makes the task of the language-proficiency tester even larger. It is depicted in Figure II, which portrays a four-by-four-by-three cell matrix, for a total of forty-eight cells, all of which would need to be adequately sampled on a comprehensive proficiency test. Since this task is impractical, test authors must make choices as to which cells will be included and which cells will be left out.

FIGURE II



Another observation regarding pragmatics should be made. Some test authors view pragmatics as a competing, nonlinguistic approach to testing. Thus, tests such as the *Spanish/English Language Placement Screening* (SELPS) (1976), consider pragmatics only, without making an analysis of other linguistic levels. Finally, thus far in theory and practice, pragmatics has been applied principally to speaking, and not to the other communicative skills.

Test Formats

Having briefly outlined the different language issues to be considered in the construction of a proficiency test, let us turn our attention to test formats. One of the first distinctions deals with the issue of "discrete point" versus "integrative" tests. The discrete point test fits nicely into the matrices exhibited thus far. It assumes that all of the tasks and topics involved in language learning can be enumerated in a list. Thus, we can make lists of phonemes, word endings, syntactic patterns, vocabulary, sociolinguistic domains, and language functions, and test each item on the list separately as illustrated by some of the examples presented at the beginning of this paper. Individual learning problems can be individually tested. Thus, a discrete point test is diagnostic in nature. It is possible to ascertain if the child has acquired each unit of the language—be it a particular phoneme, morpheme, vocabulary item, etc. Discrete point testing has its origin in native language interference (Lado, 1961) although the items are not necessarily based on contrastive analysis.

Integrative test formats take the opposite approach. A good integrative item combines numerous units of language into a single task, and thus claims greater validity. Performance on an integrative item is more closely tied to contextual restraints, as in the well-known cloze test (Darnell, 1970; Oller and Conrad, 1972). Here, a paragraph is mutilated by systematically deleting every Nth word, usually every seventh word. The examinee has to fill in the blanks with the correct word or an acceptable substitute. An example that has been used elsewhere (Stansfield, 1980) is "Once ______________ a time there were ______________ little pigs." In order to correctly answer this item the student must understand the total sentence, i.e., all the units of language in it. The item also involves both reading and writing, or if used as an oral cloze, both listening and speaking.

Contrast this integrative item with the tin/thin sound discrimination task, a discrete point item appearing on the *Language Assessment Scales* (LAS). It is readily seen that the integrative item involves a great many units of language, not merely one. This is both an advantage and a disadvantage. The advantage lies in validity, in the fact that in real conversation successful performance involves the use of numerous units of language in a single utterance. As Oller (1976) has stated, "Not even a test of 100 discrete point items is a valid measure of real language use." On the other hand, the discrete point test is especially useful to the teacher in that one can identify each unit of language that has not been learned. While the integrative test may be a better indicator of language learning, the source of errors cannot normally be identified. Examples of other integrative oral test formats are story telling, story retelling, extended answers to questions, and describing objects, pictures, etc. They are also referred to as "global" tests. Some of the language proficiency tests currently administered to bilingual children employ discrete point items exclusively. Others employ only integrative items, while still others such as the *LAS* employ a combination of both.

Another controversy surrounding the subject of test formats relates to the issue of natural versus unnatural language. Natural language involves the use of structured and nonstructured communication tasks (Burt and Dulay, 1978). Unnatural language involves the use of various types of linguistic manipulation tasks. Nonstructured communication involves a conversation between the student and the examiner, as is required on the *Basic Inventory of Natural Language* (BINL) (Herbert, 1974). Structured communication involves student responses to specific questions asked by an examiner in a pragmatic context. An example of such questions are those that occur on the *Bilingual Syntax Measure* (BSM) (Burt, Dulay, and Hernandez-Chavez, 1975). Current bias runs heavily in favor of natural unstructured communication, since this is the type of communication the child participates in daily. There are certain disadvantages to nonstructured natural communication tasks, however. A great deal of speech must be elicited in order for a sufficient range of language structures to be obtained. Also, it is not possible to make judgments as to the child's command of any structures not obtained, since the situation discussed may not have called for them. Student performance (grade) on such tasks is often dependent on personality, since some students are much more willing to talk than others (Cazden, 1972). In the preschool and elementary school this seems especially true of little girls, thus introducing a potential sex bias into the outcome.

Structured communication tasks seem to solve most of these problems. One can diagnose the child's ability to use the conditional or conditional perfect by posing a question the answer to which will require such tenses. Thus, on the *Bilingual Syntax Measure* we find questions like "What would have happened if the dog hadn't eaten the food?" The most common response is "The king would have eaten it." Through the careful development of appropriate pictorial situations it is actually possible to construct a diagnostic profile of the child's internalization of numerous structures, and to use the profile as a checklist. A disadvantage of structured communication is that with this format it is not readily possible to ask questions that will elicit all structures. For instance, how would one elicit a question, a very common structure in conversation?

Another concern surrounding structured communication is that it produces an inflated indication of the child's proficiency. There may be a discrepancy between the child's correct usage of a language form on a structured task, and his/her usage of that same form in nonstructured speech. This relates to the overriding issue of validity, and explains why nonstructured communication tasks are generally preferred. The question of the generalizability of performance on structured communication tasks to performance in nonstructured communication is in desperate need of research. Nonstructured communication tasks generally require a larger corpus of language and a more complex scoring system. Proficiency testing might be simplified considerably if there were research data indicating a strong correlation between the two types of test. Unfortunately, such research has not been conducted to date.

Previously we mentioned that some test formats employ unnatural language. Such formats involve either mimicry or manipulation. Mimicry is used on the *LAS*, the *MAT-SEA-CAL*, the *Del Rio Language Screening Test*, the *Northwestern Syntax Screening Test*, and numerous others. It is often used to see if the child can pronounce certain sounds. In the form of sentence repetition, mimicry is considered to be an indicator of syntax acquisition (Natalicio, 1979). Linguistic manipulation tasks are often based on a foreign language teaching technique known as pattern practice. Thus a student may be given a sentence in the present and told to change it to the past. Since children normally do not know grammatical terms, on tests that employ linguistic manipulation tasks the examiner usually initiates the response for the student as in the following examples from the *Spanish/American Oral Proficiency Test* (Politzer and Ramirez, 1975):

> Today it's cold. Yesterday . . . .
> He studies in the library. They . . . .
> *Hace frio hoy. Ayer. . . . .*
> *El estudia en la biblioteca. Ellos. . . . .*

It has been widely questioned whether linguistic manipulation tasks are valid measures of language proficiency (Sanchez, 1916; Burt and Dulay, 1978). Indeed, Politzer and Ramirez (1975) found that they do not work with many students. It appears that performance is related to a kind of "metalinguistic awareness" that can be defined as the conscious knowledge of the forms of a language. Some students seem to possess this awareness, while others do not in spite of their proficiency in the language. Thus, there is good reason to believe that linguistic manipulation tasks are less desirable measures of proficiency than structured communication tasks. Still, they appear on many instruments that are sold commercially today.

A hypothesis that is relevant to the debate over natural communication versus linguistic manipulation tasks is that recently put forth by Cummins (1980). Cummins distinguishes between cognitive/academic language proficiency (CALP) and basic interpersonal communicative skills (BICS). CALP is defined as those aspects of language proficiency that are closely related to the acquisition of literacy skills in L1 and L2. While the aspects are not defined, there is at least an implication that it refers to such things as a greater vocabulary and the internalization of more complex linguistic structures. BICS, which includes oral fluency and sociolinguistic competence, may exist independently of CALP. According to Cummins, CALP is more likely to be assessed by linguistic manipulation tasks than by means of natural communication tasks. Since the purpose of language proficiency testing is to assign children to classes taught in the language in which they are most capable of learning, it is essential that these measures assess CALP. "Thus, if natural communication tasks do not assess CALP, their relevance to the educational performance of bilingual children can be questioned" (1980:177).

While Cummins' observations point out the limitations of natural communication tasks, one should not dismiss these too readily since the child's L1 CALP is often laregly undeveloped. Thus, instead of tapping an undeveloped or underdeveloped dimension of language proficiency, it seems appropriate to assess the dimensions the young child should possess in one or more languages. Although the correlation between BICS and school achievement may not be high, BICS does usually exist independently of age, in at least one language. Since the same cannot be said of CALP, BICS should be the basis of proficiency assessment in the bilingual child. With older learners, i.e. adolescents and adults, the tapping of CALP may prove to be a better indicator of the language in which they can most readily learn.

Dominance as Distinct from Proficiency

In this article we define dominance as "a comparison of proficiency in two or more languages." While we recognize that subscores may and should exist by sociolinguistic domain, and by communicative skill, we link dominance to real language proficiency. While this definition is in line with the majority of scholars who have addressed the subject (Burt and Dulay, 1978; Brown and Zirkel, 1980; Macnamara, 1967; Dieterich, et al., 1979), a survey of currently published tests indicates that not everyone views dominance in this way. At times it is obvious that the test author has made no formal or informal effort to define either dominance or proficiency. Some authors view dominance as being totally separate from proficiency. Silverman, et al. (1976, p. 17) state that "Language dominance refers to the primary language in which a child interacts in a home." If dominance is established in this way, there is no need to test for it; a mere questionnaire to be completed by the parents will do. Crane (1976) defines dominance as the language in which the pupil thinks, the internal language that plays a crucial role in the learning process. She feels that a student may have a substantial command of one language and still function internally in another. Thus, she is not concerned with the systematic assessment of language proficiency.

Psycholinguists and sociolinguists, who have traditionally been interested in language attitudes and usage, have devised "quick and dirty" indirect measures to determine dominance. These have often been mere self-report measures of proficiency or usage. In other studies they have involved experimental language tasks. Lambert (1959) has presented bilinguals with long nonsense words such as DANSONODENT. The respondent identifies as many words as possible, in each language, which can be extracted from the nonsense word within a fixed time limit. The language producing the greater number of responses is considered dominant.

In another test Lambert has the bilingual read a series of cognate words, such as *general*, *regular*, etc., and makes note of the language in which each word is pronounced. The language receiving the greater number of pronunciations is considered dominant. In the United States, Keller (1974) has developed tests for Spanish-English bilinguals based on Lambert's approach. As McNamara points out,

> Many of these tests are ingenious, but their validity as measures of bilingualism remains in doubt. So far, researchers have been content if they found that the data they obtained with such tests correlated with language background questionnaires or estimates of years of experience in the two languages. It remains to be seen how well they correlate with direct measures of language skills.

As bilingual educators become more sophisticated, they develop an increasing awareness that indirect measures should not replace the direct assessment of language skills. Still, such instruments are marketed and used. Research on their validity is desperately needed.

Some Representative Instruments

In the final section of this article we shall give a brief overview of several instruments that have been developed to test language proficiency and dominance. The instruments have been selected to illustrate how the previously mentioned theories have been applied. The selection presented here includes some of the better and some of the more deficient instruments, although no attempt is made to evaluate them due to limitations of space. For critical analyses of individual instruments, the reader is referred to the numerous reviews and articles that have appeared in the *Modern Language Journal*, and in the *Proceedings* of the four International Conferences on Frontiers in Language Dominance and Proficiency Testing held annually at the University of Southern Illinois since 1977.

The Bilingual Syntax Measure (Burt, Dulay, and Hernandez-Chavez, 1975). The *BSM* uses structured communication to elicit responses to twenty-five questions based on a series of seven full-color cartoon-like drawings. The drawings are considered culture-free, and thus do not take into account specific sociolinguistic domains. The test is based on general pragmatic theory, and thus the child's responses require that inferences be made based on information available in the picture. (Why is he so fat? Why do you think they are smiling? What's the mama bird going to do with the worm? Why does he live here? What would have happened if the dog hadn't eaten the food?) The responses do not involve the naming of objects in a picture, or the description of obvious events. Rather they require a discernment about what is happening that is typical of normal conversation. In his book on pragmatic language testing, Oller (1979) praises the *BSM* for consistently establishing a pragmatic context and observes that the cartoon drawings are naturally motivating to school children.

Responses to the *BSM* are scored globally, and thus are counted as either correct or incorrect in the use of syntax. While the exclusive emphasis on syntax means that phonology and lexicon are ignored, syntax is nonetheless the most important linguistic component. Research on the Foreign Service Institute *Oral Proficiency Interview* indicates that syntax accounts for more of the variance than any other linguistic or communicative scoring criteria used (Wilds, 1975). Thus, in deciding which of the cells to test among the thirty-six depicted in Figure I, the authors have chosen the one (spoken syntax) that correlates most highly with the results that would be obtained via a more comprehensive assessment. The result is a useful short test that can be administered in five to eight minutes.

Basic Inventory of Natural Language (Herbert, 1974). The chief characteristic of the *BINL* is that it produces nonstructured natural communication for analysis. It is designed to be used as a show-and-tell activity by elementary school children. Several students are joined in a small group and each is asked to choose and describe one of forty full-color pictures of different situations. The other children are encouraged to add to the description. The test design is intended to create natural talk between children. The entire activity is recorded inconspicuously on a cassette recorder. After each child has a chance to produce at least ten sentences, the examiner transcribes these on to a score sheet. The question-answer syndrome typical of most tests does not take place, and since no adult is present, the child does not even know she/he is being tested. The scoring of each student's obtained language sample is based on an analysis of the student's oral fluency (total number of words and average sentence length) and level of sentential complexity (total number of clauses, phrases, and modifiers divided by the number of sentences). Thus, we can see that the test assesses vocabulary and syntax, but not phonology. Since the pictures represent different sociolinguistic domains, any of these may be assessed, but they are not examined systematically. It is also apparent that the scoring system (counting phrases, clauses, average sentence length, etc.) makes use of integrative measures. No penalty is assigned for errors in discrete points of grammar. Thus, nonstandard dialect (She be sick.) is fully acceptable. This is a distinct advantage since other measures generally do require a judgement as to the acceptability of a child's speech. Similarly, the instrument gives full credit for ellipsis in natural discourse. If, in answer to another child's question "Where are the toys?", a child responds "On the table", the child is given credit for the more complex sentence "The toys are on the table." The *BINL* is one of few tests to give such favorable treatment to the natural phenomenon of ellipsis.

Language Assessment Scales (de Avila and Duncan, 1975). This is probably the most widely used instrument in the United States. A survey conducted in Colorado by one of my students showed that it is used by 80 percent of the districts having a bilingual program (Jones, 1980). The *LAS* is divided into five sections, which include both discrete point and integrative measures. Part I is a thirty item minimal pair sound discrimination task. The student hears two words, such as yes-Jess, and tells whether they are the same or different. Part II involves naming the words associated with twenty pictures. Part III involves phoneme production. The student repeats either a single word or a sentence while the examiner rates the pronunciation of a particular sound as either correct or incorrect. (The rivers are moving.) There are thirty-six items in this section. Part IV consists of ten sentence comprehension items. The students listen to a sentence and then identify which of three pictures the sentence is associated with. The pictures are constructed so as to represent discrete points of syntax and lexicon. Thus, for the sentence "The man is pushed by the woman", one of the distractors represents a man pushing a woman. In order to answer the question correctly, the student has to understand the passive construction. Part V consists of a story retelling task. The student hears a short taped story about several friendly monsters and then retells the story in his own words. This is an integrative measure. It is rated globally on a scale of one to five on the basis of vocabulary and syntactic maturity. Thus, we see that the *LAS* is a mixture of different approaches to testing. It employs both discrete point and integrative formats, and utilizes natural and unnatural language. It tests phonology, syntax, and lexicon, but like most tests of language proficiency and dominance for children, it assesses only the listening and speaking skills.

James Language Dominance Test (James, 1974). The *James* is a short test consisting of forty items designed for kindergarten and first grade Hispanic children. There are twenty comprehension items in which the child points to one of six line drawings that refer to the vocabulary items in the oral stimulus, e.g. *¿Dónde está la casa?* The production section, also containing twenty items, requires that the student state orally the vocabulary depicted in additional drawings, e.g., *¿Qué es esto?* (*perro*). Thus we see that the *James* measures lexicon exclusively. The vocabulary items appearing on the *James* come mostly from the home domain. Three items in particular, "hose," "stove," and "tie," are scored separately in order to determine the home language of bilinguals. The relationship of these items to home language use was validated by the author. Yet all of the items on the test represent high frequency vocabulary, and are composed almost entirely of nouns. For children with limited proficiency, tests of the lexicon, such as the *James*, often err on the side of overstating language proficiency. This is because the first stage in language acquisition consists of a survival level in which the learner expresses needs with single-word sentences. Thus, a learner may develop a functional vocabulary for survival communication without having acquired any syntax. On the *James*, such a learner's score could misclassify him as a balanced bilingual.

Tests of simple vocabulary are usually restricted to nouns, which can be depicted visually. While they sometimes include adjectives and adverbs, they often overlook function words such as conjunctions, articles, prepositions, and pronouns. These are the words that show grammatical relationships. Some other tests that measure vocabulary exclusively or almost exclusively are the *Dos Amigos Verbal Language Scales* (Critchlow, 1974), the *Comparative Language Dominance Test* (1975), the *Test for Auditory Comprehension of Language* (Carrow, 1973), and the *Woodcock Language Proficiency Battery* (Woodcock, 1980).

The lack of items to measure the cognitive/academic language proficiency described by Cummins, is painfully apparent on the *James*. Thus, it is probably of little use in determining the language in which a child should first be taught literacy. On the other hand, the *Dos Amigos* and the *Comparative Language Dominance Test* do progress into the realm of CALP with the inclusion of academic vocabulary items such as "difficult," "costly," "lengthen," "maximum," and "multiply."

Crane Oral Dominance Test (Crane, 1976). The *Crane* is designed as a test of dominance, not proficiency. The examiner reads aloud a set of four pair-words, with each word repeated twice. The child repeats as many words as can be remembered. If the child recalls all four words, the examiner reads aloud eight pairs of words. There are eight sets (sixty-four words) like the one below on the test:

window, window
mister, mister
vaso, vaso
sucio, sucio
cara, cara
jugar, jugar
growing, growing
paper, paper

A tally is placed next to each word that is repeated and the number of words remembered in each language is calculated and compared. If the difference is three or less, the child is classified as a balanced bilingual.

The author of the test believes that it indicates the language in which the child retains information best. Several years ago I showed the test to the director of bilingual education for the Boulder Valley Public Schools. He administered it to some twenty first-graders at Lincoln Elementary, a local bilingual school. Although only a minority of the students came from Spanish-speaking homes, and about half were Anglo-Americans, all of the students obtained the rating of "balanced bilingual." Their real proficiency in Spanish was limited to a few memorized phrases and songs, and a hundred or so words that had been drilled through the use of Peabody cards. These children had been in a FLES-like bilingual program for two years, and were able to recognize and mimic the words in Spanish as well as the words in English (García, 1976). Thus, the validity of this measure is questionable.

Spanish/English Language Placement Screening (1976). The *SELPS* is based on a functional approach to the description of language proficiency. The five functions assessed are answering questions, naming objects, following directions, describing objects, and describing pictures. The examiner asks questions to the child and writes down the response for later analysis. In the naming objects section, the examiner places a box on the table and tells the child to open it and take out the toys. He then asks what each of six items of home vocabulary (*taza*, *cuchara*, *plato*, *peine*, *espejo*, and *reloj*) are called. After they have been identified, the student is told to place one back in the box and to give two of them to the examiner (following directions). In the describing objects section, the examiner points to the *taza*, *plato*, and *cuchara* and asks "*¿Qué puedes hacer con estos*? The same process is repeated in reference to *peine* and *espejo*. In the last part of the test (Spanish version) the student is shown two pictures and asked *¿Qué está pasando en este dibujo*? The pictures for the Spanish version represent a birthday party with children breaking a piñata, and a mother drying a child who has just come out of the bathtub. On the English version the pictures represent children doing things at a playground and a clown selling balloons at a circus. Thus, this test focuses on the two domains of home and neighborhood. The playground setting represents a common approach to assessing the neighborhood domain when testing children.

The scoring system used on the *SELPS* is unique. Instead of grading responses for linguistic correctness, only the issues of quantity and language choice are considered. First the determination is made as to which language the child used in responding to each version. The categories are (a) mostly

Spanish response, (b) mostly blended (Spanish and English) responses, (c) mostly English responses, (d) few or no responses. The student is given two ratings for language choice, one for each version of the test. Then the quantity of responses is compared. The choices are (1) more responses to the Spanish version, (2) approximately equal responses to both versions, (3) more responses to the English version. The combination of two letters and one number is then looked up on a categorization chart that classifies the child's proficiency and dominance as either Spanish monolingual, predominantly Spanish, bilingual, predominantly English, or English monolingual.

It is apparent that *SELPS* focuses on language functions and sociolinguistic domains. It also takes into account another important characteristic of bilingualism—language alternation in the form of code-switching and code-mixing. Each is viewed as a natural occurrence and is taken into account only to the extent that it effects language choice. Thus, there is no penalty for using an English word in a Spanish utterance on the Spanish version. If the student's responses mix both languages continually, he is rated as bilingual. However, if substantially more words are spoken in English than in Spanish, then he could be placed in the predominantly English category.

Conclusion

We have seen that there are linguistic, sociolinguistic and behavioristic theories to support different approaches to the assessment of language proficiency. Each discipline-based theory has been transferred into an appropriate technology for developing item formats. While any of these theories alone can serve as a point of departure for test development, a combination of the three will produce a test that is stronger in content and design. Future efforts to assess language proficiency should strive to develop more comprehensive instruments. Also, bilingual educators must realize that the technology exists to assess proficiency and dominance. However, the assessment task is complex. Local districts must reserve sufficient time and money to execute it in a professional manner.

NOTE

[1] Zirkel (1974) and Silverman (1976) refer to semantics as a linguistic component separate from lexicon. It appears that both were influenced by MacNamara (1967) who listed the linguistic components of language as being phonology, syntax, semantics, and lexicon. We are aware of no linguistic theory which includes semantics and lexicon as separate and necessary components of a grammar. Generally, in the field of linguistics semantics refers to the meanings and contextual constraints placed on words, and lexicon refers to the words that are available for use. While the inclusion of either semantics or lexicon within a grammar can be defended, the inclusion of both is incorrect. In this article we have used the more traditional term (Lado, 1961) which is lexicon.

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ED212150

LANGUAGE DOMINANCE TESTING IN THE UNITED STATES: A REVIEW OF TECHNOLOGICAL ADVANCES SINCE THE 1940s

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INTRODUCTION

During the past twenty years much attention has focused on issues related to equal educational opportunity. One area that has received particular attention has been bilingual education. In the United States, bilingual/bicultrual education is used increasingly in the teaching of children whose dominant language is other than English. As the next decade approaches, the number of such children (specifically Spanish-surnamed) will continue to grow, making this minority group the largest within our country. It is becoming increasingly important, then, to determine the theoretical basis for bilingual/bicultural programs. In addition, there is a major need to reach agreement on which approaches meet the unique needs of this particular group of children.

In both the federal and state mandates for bilingual education, reference is made to language dominance or language proficiency. These terms comprise the basis for judgments regarding eligibility of students to receive bilingual education. However, severe problems have emerged in developing definitions, methods, and instruments to measure a child's language dominance. Generally, children who are screened for eligibility for such programs receive two levels of testing. The first is a language dominance test that will measure a child's dominant or primary language. This is usually a gross measure to help a teacher make curricular decisions regarding the student. If he or she speaks only Spanish the child will be placed in a bilingual program. If the child is found to be English-dominant and knows absolutely no Spanish, then logically he would be a candidate for the mainstream classroom. His or her Spanish surname has not instantly provided him with Spanish-language skills. But what of the child who appears to be bilingual? A student who speaks two languages, although not equally well, can be a puzzle that the teacher must solve.

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The second level of testing initiated at the same time as the above, or following, is language proficiency. This type of language testing will answer some of the basic questions left unresolved by language dominance testing and will help the bilingual teacher in the assessment of each student's specific language needs in both languages. It is base line data from which a child's individual language program may be developed. Does the child control syntax and vocabulary in both languages? Does he possess a strong linguistic base in Spanish, with minimal knowledge of English? Does the child have poorly developed language skills in either or both languages? All of these questions may be at least partially answered through the use of proficiency tests.

The problem that has arisen across the nation revolves around approaches to testing both language dominance and language proficiency. The courts and many educators apparently believe that bilingualism may be clearly defined; a child is either English-speaking, Spanish-speaking, or bilingual. The failure in this rationale lies in the fact that bilingualism is a multifaceted phenomenon. The question of language dominance becomes a critical factor in the process.

This paper will explore the specific issue of language dominance testing in detail. A history of language testing in the United States will be followed by methods presently utilized for the determination of language dominance, problems encountered in language dominance testing, and some specific research that has been carried out related to this important issue.

HISTORY OF LANGUAGE TESTING

Emphasis on language learning, specifically foreign language learning, emerged in the early forties with the U.S. Armed Forces (Silverman, et al., 1976). Members of the military were increasingly aware of the value of knowing and speaking another language through exposure to foreign cultures during World War II. As a result, twenty-seven different language courses were being conducted at fifty-five colleges and universities by 1943. By 1948 the Defense Department had designed language proficiency tests in thirty-one languages for military personnel assignments (Silverman, et al., 1976). Since then, other government agencies have developed tests to evaluate the language proficiency of their employees for job placement and promotion purposes.

The development, design, and in some instances, the utilization of many language tests today, grew out of these earlier military and government language tests (Silverman, et al., 1976). These include foreign language tests developed by the Educational Testing Service and those used in English-as-a-second language and bilingual education programs.

The Bilingual Education Act of 1974 stated that:

> . . . a national assessment must be conducted of the educational needs of children who speak primarily a language other than English and of the extent to which such needs are being met from Federal, State, and local efforts, including, not later than July 1, 1976 a census of the number of children in the States and a plan to be carried out in five years for extending bilingual education programs to all such preschool and elementary school children. . . .

With the advent of such a national educational policy regarding the language assessment of linguistically different students in the United States and the directive to agencies such as the National Institute of Education to provide supportive research in the area, these directives may help to determine the special needs of bilingual students in the United States.

Most linguists today generally agree on the following definition of language:

> Language is a highly complex system of conventional oral symbols by

> means of which members of a community interact for the purpose of communication (Silverman, 1976).

More specifically, language is a system of three highly structured components: (1) phonology (sound), (2) grammar (form and structure), and (3) semantics (meaning).

However, while it appears that linguists agree, at least somewhat, about the term "language," little agreement exists on other complex concepts of bilingual education, such as language dominance and language proficiency. Silverman quotes U.S. statutes as defining language dominance "as the primary language in which a child interacts most often in the home." Zirkel (1976) views language dominance in terms of the comparison of skills in two or more languages, while Jones (1975) refers to language proficiency as the degree to which an individual demonstrates his or her linguistic competence in a language, regardless of how that language may have been acquired.

Mackey (1972) discusses three ways in which bilingualism can be described. The first way can be labeled "category," that is by proficiency and/or function. Such terms as "full bilingualism," "partial bilingualism," and "passive bilingualism" describe proficiency, while home bilingualism, street bilingualism, and school bilingualism are descriptors utilized in the function categories. However, categories may be difficult if not impossible to limit, and in fact many of them may overlap.

Bilingualism has also been described through utilization of dichotomies, for example, "compound vs. complex bilingualism," "individual vs. national bilingualism," "balanced vs. unbalanced bilingualism," "simultaneous vs. sequential bilingualism," and so on. A similar difficulty to that attributed to the schema stated above has been applied to the description of bilingualism through dichotomies. Here, such categories are rarely mutually exclusive and again they may overlap.

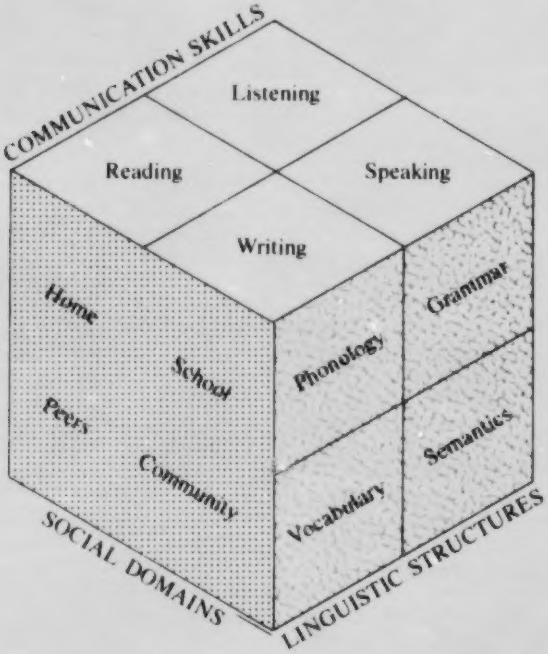
The third classification of definitions of bilingualism has been through the use of scales. Mackey describes these as "dominance configurations, profiles of bilingual background, and bilingual semantic differentials." He further describes the problems with such measures as the fact that such scales "presuppose standard units of measure which do not exist, and valid procedures for their delimitations."

Silverman, Noa, and Russell (1976) described the difficulties in attempting to determine what language, and which linguistic structures will be evaluated in a nonnative speaker of English. They suggest that a child's "communicative competence" be assessed informally by the classroom teacher as a gross screening procedure. Next steps would include decisions as to what linguistic structures would be measured in the test selected, including vocabulary, phonology, grammar, or semantics. In addition, the authors suggest that any test must take into account both social context factors and the communication skill area to be examined by the test (listening, speaking, reading, writing). A three dimensional matrix of factors that the authors suggest must be considered is represented in Figure 1.

Tests of language dominance can be categorized into those that measure productive language and those that measure receptive language. Receptive language skills include listening and reading, which are passive activities, while productive language skills include speaking and writing which are

FIGURE 1

LANGUAGE ASSESEMENT DOMAINS


COMMUNICATION SKILLS
Listening
Reading
Speaking
Writing
Home
School
Peers
Community
SOCIAL DOMAINS
Phonology
Grammar
Vocabulary
Semantics
LINGUISTIC STRUCTURES

active in nature. These tests can be divided into direct measures and indirect measures of language. Direct measures are those in which a child is directly involved in speech production or reception. The indirect method classifies on the basis of second-hand information; for example, a parent interview where a child's language is not the primary source of language dominance determination.

Various attempts have been initiated to determine the best way to measure each of the domains mentioned above. At this writing no single best way to do this has been discovered. One indirect technique that has been developed is that of the home interview. This type of assessment may include an interview with a child and/or his or her parents. Although this may provide sociolinguistic information, it has its drawbacks. The rapport that the interviewer establishes with the parents may affect the accuracy of the information obtained in the interview. More importantly, the child may never be questioned directly, making an actual assessment of his or her abilities doubtful.

The three remaining direct techniques are story telling, question-answer methods and language repetition and completion. Story telling is a popular technique with elementary level students, and has been effective at that grade level. A child is presented with a stimulus such as a book, a picture, or a painting and is asked to tell the examiner a story related to what he sees. The examiner then assesses the language elicited from the child. However, this technique has several disadvantages. The material may be linguistically or culturally biased and this would affect the quality of the responses obtained from the students. Second, it is difficult to delimit the types of responses to a particular language domain. Finally, if the child completely omits one or another language category, it is almost impossible to assess whether he omitted it because of his inability to function in that particular language category or because it was not pertinent to the story he told.

The question-answer method is self-explanatory. A child is asked a question and he must answer appropriately. However, in order to cover all the aspects of language in each domain, an inordinant number of items would be required. Phonological, morphological, syntactical and semantic stimuli in the form of questions would have to be presented and listening, speaking, reading and writing skills measured in order for this method to work.

Language repetition and completion measure pronunciation, intonation and articulation, and grammar. Once again the techniques are self-explanatory. In the first method, the student simply repeats what the examiner has said, while in the latter method a student completes a sentence or phrase. Silverman suggests that these approaches have drawbacks as well. A child's ability to repeat does not necessarily mean that the child can use or adapt these patterns in everyday speech. Also, listening and speaking are closely related. It may be difficult to assess whether a child has mispronounced a word because he could not hear the sound (it may not be incorporated into his sound system) or if he really could not pronounce the item.

The need for tests of language dominance is obvious. Social, legal, and political pressures to equalize educational opportunities for linguistically different students have increased. Along with these pressures, problems have arisen in the selection, use and abuse of language dominance instruments. The *Lau* decision in particular resulted in the establishment of centers throughout the United States that serve as checks on areas where large numbers of linguistically different children attend school. Through these centers, an attempt is made to ensure that a survey of language dominance is completed within the school districts these children attend. In addition, the Office of Civil Rights has found that several school districts are in noncompliance of guidelines set forth for the elimination of educational inequities. By not complying with these guidelines school systems face litigation or even loss of federal funds.

In many cases, the language dominance tests are given in school districts solely as a basis for qualification for federal funding or in an attempt to satisfy compliance orders. These tests are selected on the basis of availability rather than on appropriateness. A recent abundance of testing instruments that purport to measure language dominance has facilitated such actions. In other cases, the wrong instruments have been used for language assessment. For example, tests that measure cognitive skills may be used as instruments to measure language dominance. The use of these I.Q. tests as substitutions for instruments that assess language dominance is simply unacceptable.

Even when appropriate instruments are selected, problems arise. A major problem was reported by the Committee for the Evaluation of Language Assessment Instruments (Texas Education Agency, 1977):

> The committee was very concerned that tests (were) being developed with inadequate attention to appropriate test standards. For example, some tests are standardized on a small number of children, report no suitable reliability or validity data, and fail to identify the language characteristics of children on whom the test was normed. It is unfortunate to report that, if our committee were evaluating these . . . tests based on standards commonly accepted in our profession (e.g., Standards for Educational and Psychological Tests), all tests would be judged inadequate by these standards and therefore the committee would be unable to recommend the unqualified use of any of the measures.

Another problem with existing tests is that not all facets of language dominance are measured. Due to time constraints in the testing process, a limited amount of language is actually tested. Some tests may measure syntax, while others measure vocabulary, but none have been developed that measure the whole gamut of language domains.

A final area of concern deals with the possibility of measuring language dominance in the first place. Silverman, Noa, and Russell (1976) have expressed the view that:

> Language dominance is a relatively new concept in linguistics and education. In fact, it may not be unreasonable to say that language dominance is a legal and political rather than a linguistic, educational or psychological construct.

It seems that the concept originated as the result of the *Lau v. Nichols* court decision and the subsequent remedies that were developed to insure proper identification of students of limited English proficiency. Due to the relative newness of the concept, little conclusive research has been conducted in this area. The following section will review significant studies dealing with assessment of language dominance.

Elizabeth Carrow (1972) utilized a test of auditory comprehension to measure English comprehension. Using a revised version of the Auditory Test for Language Comprehension, which permits the assessment of oral language comprehension of English and Spanish without requiring language expression, she indirectly assessed the language skills of sixty children. The test was administered in English and Spanish, and required the subjects to indicate their response by pointing to the picture that corresponded to the examiner's utterance. Results indicated that monolingual children obtained significantly higher mean scores in English than the bilingual children. Specific linguistic areas in which the scores of monolingual children were significantly higher than those of bilingual children were nouns, pronouns, plurality of nouns, and noun phrases with two adjective modifiers.

Miller (1976) reported on the comparative language tests in English and French given to pupils of the Bilingual School, Buia, Republic of Cameroon to measure the extent of bilingualism among three different intake groups, those of 1966, 1969, and 1972. The use of entirely objective multiple choice items was to measure fairly and mathematically the language gap between English-speaking and French-speaking pupils in both English and French. This indirect measure included sections dealing with listening comprehension, knowledge of structures and vocabulary and finally, reading comprehension. The results of such tests produced evidence that the system of language teaching in the school had been a qualified success. However, the authors did report that modifications in the tests are certainly needed, especially insofar as the oral test is concerned.

In March, 1955 Lambert reported on a method of measuring linguistic dominance and related the measure to cultural and personality characteristics. The subjects (native French students and native undergraduate and graduate English-speaking French majors) were given simple directions such as "push the key painted blue," in two languages, and the speed of their response was analyzed with reference to the different levels of the subject's linguistic ability.

The experimenter controlled a key that simultaneously activated a reaction-time clock and a Ranschburg exposure apparatus. The directions told the subject to push a certain one of his eight keys, the activation of any one of which would stop the clock. The theory that Lambert espoused was that if one were a perfect bilingual—equally facile in both languages—there should be no difference between the speeds of response to which one reacted to directions given by the experimentor in the two languages.

The results of the experiment demonstrated that the groups differed reliably in speed of response to directions given in both languages and in the direction predicted from their language experiences. Lambert concluded that this method permitted statistical analysis and scoring of language dominance or language balance. Further, he found that language dominance was related to cultural and personality characteristics. Finally, he suggested that further research should be directed toward the personality variables involved in bilingualism.

In their study of indicators of language dominance, Green and Zirkel (1974) hypothesized that the use of parallel tests of ability in two languages offered the practical possibility of simultaneously serving the functions of individual diagnosis and program evaluation and also had the advantage of being administered on a group basis over short periods of testing. The purpose of their study was to investigate the differences in performance of Spanish-speaking children on alternate forms of the oral vocabulary subtest of the Inter-American Test of General Abilities in Spanish and English that may be attributed to the factors of practice effect, language level, and chance errors of measurement.

The subjects were 148 Spanish-speaking first-grade pupils in a large Connecticut city. These students were divided randomly into two groups of seventy-four pupils each. The instrument was administered to one group first in Spanish and then, after a brief respite, in its alternate form in English. The other group received the same forms but in reverse order. The same bilingual examiner administered the test to each group in both languages to attain further uniformity of the testing conditions.

The results of the study revealed consistently higher mean scores for the Spanish form over the English form and smaller, less consistent gains that favored the second over the first session. The authors concluded that if a child is equally proficient in both languages, the chances are 2:1 that the difference in his two scores will be less than 3.0 points. However, the authors recommend that use of parallel tests of ability in two languages is an indicator rather than the measure of language dominance. Their results indicated that the use of such an instrument offers at least a possible starting point for pupil placement and progress in program development. In conclusion they point out that the complexity of human behavior across a dual language matrix and the limitations of brief group testing preclude anything more than a cautious preliminary judgment as to any individual pupil's language dominance.

In a follow-up study, Zirkel and Green (1974) examined the validity of picture-type parallel tests of aural ability as a measure of aural language dominance. They explored both the relationship of the test with various criterion measures as well as its relationship to the subject's length of residence in the continental United States. The Inter-American Tests were used once again in this study. The results were then compared with concurrent data on the bilingual dominance of each pupil collected via a modification of the Hoffman Bilingual Background Schedule (BBS) and a language-dominance rating scale developed by the principal author to be administered to the pupils' parents and teachers.

The subjects were sixty-two Spanish-speaking first grade pupils in a large Connecticut city. The oral vocabulary section of the Inter-American Test was administered to the subjects in groups of fifteen to twenty each during May of 1971. Independent of this testing, the pupils' regular teachers, who were bilingual, were asked to evaluate the pupils according to the dominance rating scale. During the same month, the parents of the subjects were administered both the revised BBS and the rating scale as part of a comprehensive interview survey. A team of local bilingual educators conducted the interviews. While parents were given the choice of being interviewed in Spanish or in English, most of them chose to be interviewed in Spanish.

The results of the experiment reflected a general agreement between the oral vocabulary difference scores and the criterion measures. However, the specific disparities among the instruments seemed to be localized in the determination of the "transitional" category intermediate between the categories of Spanish and English dominance. Zikel and Green reiterated their suggestion that parallel testing of aural ability is a promising, practicable technique for the assessment of language dominance of Spanish-speaking students.

While the above investigations dealt mainly with receptive measures of predicting language dominance, significant research has been conducted that reviews the use of productive measures for determining language dominance. In his 1971 investigation, Upshur attempted to evaluate oral proficiency through objective evaluation. He proposed that: (1) testing provides a continuous flow of information regarding the students' success in their attempts to speak English and (2) that tests are grades for control of instruction and for evaluation of proficiency reports.

He suggested that proficiency could be measured by determining a speaker's knowledge of linguistically defined elements and processes that are useful for communication and that proficiency is a measure of communication ability regardless of this knowledge. Upshur believed that cumulative records of instructional success provided the best measure of proficiency as defined in the first view. However, he proposed that ability is best measured situationally. In conclusion, Upshur suggested that oral tests are appropriate and necessary in order to evaluate the proficiency of pupils.

In a variation of the standard word association technique, Capco and Tucker (1971) investigated the relative language skills of first-grade children enrolled in a bilingual education project in the Laboratory School of the Philippine Normal College in Manila. The method involved an adaptation of the bilingual word-association technique in which the first fifty words from the Dent Rosanoff stimulus list in English and the corresponding Tagalog translation to assess language skills. The results of this individual oral interview method demonstrated that the subjects generally performed better in their native language than in their second language. The authors concluded that although such indirect measures for language testing may prove to be useful short-term screening devices, researchers must continue to develop improved instruments to detect language skills of bilingual pupils.

In a study by Maurice and Roy, carried out in 1974-75 at Ecole Sacre-Coeur, Hunt's Terminable-Unit (T-Unit) was proposed as a meaningful yardstick for measuring bilingualism. The T-Unit was defined by Maurice and Roy as "a single independent predication together with any subordinate clauses that may be grammatically related to it. It may be a simple or a complex sentence. When a coordinating conjunction occurs between independent clauses, it is considered as the first element of the second T-Unit."

The study provided a report of the application of the T-Unit as a measurement of bilingualism within a population of students at the grade two, four and six levels. Less than 10 percent of the population was of French background, while the majority were monolingual English. The students in grade six had never received more than 60 percent of their instruction in French. The students in grades two and four received 80 percent of their instruction in French. The procedure for getting speech samples was to show a short film and to subsequently ask the students to retell the story first in French and then in English. A high correlation was observed between the degree of maturity found in both languages as measured by the T-Unit. Although the authors hypothesized that the individual who has reached a certain level of thought in one language will easily transfer that ability to languages he is acquiring. Further, the authors suggest that the concept of the T-Unit affords a measurement of linguistic maturity that bypasses the mechanics of language such as pronounciation, spelling, etc., and that the T-Unit deserves consideration as a measurement of developing linguistic ability. Specifically, they considered that the T-Unit length seemed to be a better indicator of maturity as the number of T-Units produced tends to decrease as the student develops the ability to produce more complex T-Units. Finally, they concluded that Hunt's T-Unit served to demonstrate an unsuspected balance of bilinguality in the subjects studied, and that this measure is promising as a measure of parallel linguistic development.

Cooper (1969) hypothesized that the traditional measures of degree of bilingualism typically yielded a single difference score, computed by subtracting a score obtained in one language from a score obtained in another. Consequently, he felt that the use of the resulting difference scores to express degree of bilingualism must be insufficiently revealing of relative proficiency, inasmuch as bilingual speakers might use each language under socially differentiated circumstances. In a study presented in the *Modern Language Journal*, Copper and Green (1969) adapted two techniques, word naming and word association, for use with Puerto Rican bilinguals living in New York. The techniques yielded Spanish and English scores corresponding to five hypothesized societal domains. These were family, neighborhood, religion, education and work. These techniques for the measurement of degree of bilingualism were distinguished from the traditional approaches in being differentiated with respect to such societal domains or contexts. Hence, these techniques were designed to yield a set of scores to reveal those differences in bilingual proficiency that might be associated with differential societal usage of two languages.

Performance on the word naming and word association tasks were studied in relation to six criterion variables: number of years on the mainland, occupation, accentedness, English repertoire range, listening comprehension in both English and Spanish.

The results of his study demonstrated a significant correlation between the criteria, and the ability of the word-naming subtest to distinguish varying patterns and levels of performance of demographic subgroups. These results suggested that word naming may represent a promising technique for the contextualized description of degree of bilingualism. The continuous word association subtests, on the other hand, were not successful inasmuch as they neither predicted the criterion variables nor distinguish among demographic subgroups that one would expect to be different with respect to degree of bilingualism.

Cooper concluded that the use of such contextualized measures might be useful not only in describing the relative proficiency of bilinguals as realized in varying contexts but also in describing the direction of generational shifts of these abilities where the tasks are administered to subgroups differing in age or in the opportunity to learn both languages.

In a paper presented at the AERA 1977 Annual Meeting, Silverman and Russell studied the relationship among three measures of bilingualism and their relationship to achievement test scores. The major purpose of their study was to empirically examine the rationale for using multiple measures of language dominance. Specifically, the relationship between three often-used measures of relative language proficiency or language dominance were investigated. The population for this study was comprised of 1799 students grades K-12 from three school districts within the same geographic area in Washington State. All students were judged to be possibly Spanish-English bilingual on the basis of their surnames or other information available at the district level. Students identified as being potentially bilingual by school district officials were administered the Language Facility Test (LFT) by trained bilingual administrators. Concurrently and independently, the Home Bilingual Usage Estimate (HBUE) and Teacher Judgment Questionnaire (TJQ) were administered to parents and teachers respectively. Three measures of language usage were employed to determine language dominance of the students, while two standardized achievement tests were used to determine the achievement level of these students.

The results of the study indicate that the three measures did not have a high degree of interrelationship and that based on this set of data, one measure would not serve as a substitute for the others. Each looked at the student's language from a somewhat different perspective. However, the fact that the results from each measure purported to indicate the "language dominance" of students implied that the results from the measures should converge. In their study, Silverman and Russell found that three possible explanations may account for their findings. First, the study itelf may have been limited given the small sizes and some lack of control in the administration and scoring of the instruments. Second, the instruments themselves may have been faulty. And the third explanation for these findings may have resided in the construct "language dominance" itself. The authors suggested that language dominance is a relatively new concept in linguistics and education and that it may not be unreasonable to say that "language dominance" is a legal and political rather than a linguistic, educational or psychological construct.

In a study completed in 1980, Quezada determined the extent and manner through which language dominance could be predicted by language dominance tests. Since it was neither realistic nor economical to assume that trained bilingual experts would be available or that school systems would be able to provide such services for the determination of language dominance, the use of a standardized test was identified as an efficient, practical alternative. It was assumed that the test that etablished the highest correlation with the expert opinions could be utilized or compared with existing norms to make a placement procedure in bilingual programs more accurate.

Three categories of language dominance instruments were utilized in this study: tests administered to subjects as a group, tests administered to the subjects individually, and sociolinguistic questionnaires. As an example of a group administered test of language dominance, the vocabulary section of the Inter-American Test of General Abilities was administered to the subjects. This test consists of vocabulary words or expressions dictated by the test administrator. The child then marks the appropriate corresponding object in a row of pictures. The test was administered first in Spanish, then in English. Test questions were equivalent in level of difficulty in the two languages. This test measures the students' ability to comprehend a spoken word in either Spanish or English and then locate the corresponding picture on the test sheet.

The second test category attempted to classify students' language dominance through individual assessment in each of the languages to be tested. The Crane Test presents a series of words to the student, which he or she must repeat. Auditory memory rather than actual oral language comprehension is the basis for making dominance decisions in this test.

The third type of assessment was made through the use of sociolinguistic questionnaires. In these instruments, information gleaned from the student regarding language use outside the school is the basis for determining his or her language dominance. Both the Pupil Questionnaire for Language Dominance and the optional questionnaire section of the Crane Oral Domiance test were used as examples of sociolinguistic questionnaires.

The 123 participating students were randomly selected from lists of Spanish-surnamed students enrolled in three school districts in the State of Connecticut. Upon securing parental permission for inclusion in the study, each of the students included in the sample was interviewed. The purpose of this interview was to secure samples of students' language to be rated by the three bilingual judges. The conversations were taped and three judges made determinations regarding subjects' language dominance based on these speech samples.

The conversations were recorded and the interviewer and two additional judges with expertise in bilingual education made assessments of each participant's language dominance. The criteria for selection of the three participating judges included a minimum of three years experience in bilingual classrooms, a master's degree in bilingual education or related area and coursework or training in the field of language assessment. The criteria for judges regarding the subjects' language dominance were based on the students' overall ability to express themselves clearly in English and in Spanish. This assessment was based on the student's use of grammar, vocabulary, syntax, fluency, and oral language comprehension.

Since no absolutely accurate method of determining language dominance has been established thus far, it was believed that the use of bilingual judges would provide a basis on which validity of subjects' language, as assessed by instruments, could be compared. The use of combined opinions from two judges on language dominance demonstrated a high percentage of agreement. However, the criterion for the actual language dominance of subjects' language dominance was agreement by all three judges. It was against this measure that each instrument was then compared and analysis of agreements and relationships were completed.

In addition, all participating students were administered the three instruments identified above. The tests were administered by trained testers who were bilingual in Spanish and English. Tests were administered within one month after the interview had been taped. This was done in an attempt to control for the effects of increased language skills through specific language classes provided in the participating schools. It was a method to determine that students' language skills would be relatively similar at the time the independent variables were assessed.

This investigation studied four questions related to the problem of assessing students' language dominance. Each research question is stated below and findings specific to each are provided. Table 1 describes the comparisons between judges' opinions and the instruments for assessing language dominance.

TABLE 1

COMPARISON OF TOTAL JUDGES' COMBINED OPINIONS AND TOTAL INSTRUMENTS FOR ASSESSING LANGUAGE DOMINANCE

	N*	Percent of Agreement	Lambda	Cramer's V	Significance
Inter-American Test	73	16%	+.26	+.39	no
Crane	73	22%	+.26	+.43	no
Crane Questionnaire	68	54%	+.48	+.57	no
Language Dominance Questionnaire	63	66%	+.48	+.53	no

*The total numbers used for this analysis were dependent on judges' agreement of language dominance as well as agreement with categories as determined by the selecteted instrument.

Research Question Number One:

> What is the relationship between group-administered tests of language dominance and bilingual judges' opinions?

Data analysis demonstrated that little relationship (16 percent agreement) existed between the Inter-American Test of General Abilities (Oral Vocabulary subtest), a group-administered test of language dominance, and the opinions of bilingual judges regarding students' language dominance. These results were not significant.

Research Question Number Two:

> What is the relationship between individually-administered tests of language dominance and bilingual judges' opinions?

A review of the data found that little relationship (22 percent agreement) existed between the opinions of bilingual judges and the Crane Oral Dominance Test. These results were not significant. However, while little agreement existed with bilingual judges, this instrument did reflect a slightly higher relationship with the judges than did the Inter-American Test of General Abilities.

Research Question Number Three:

> What is the relationship between language surveys utilized to determine language dominance and bilingual judges' opinions?

Two sociolinguistic questionnaires were included in this section. The first, the Pupil Questionnaire for Language Dominance Survey, proved to have the highest correlation (66 percent agreement) with bilingual judges' opinions, although these results were not found to be statistically significant. The second questionnaire, the optional portion of the Crane Oral Dominance Test also demonstrated a substantially higher relationship (54 percent agreement) to judges' opinions when compared to other instruments included in the study. However, these results were not statistically significant.

Research Question Number Four:

> What is the relative efficacy of group and individual language dominance tests, and language dominance survey forms in predicting language dominance as classified by bilingual judges?

Each of the instruments included in this study were compared to determine the relationship different combinations of instruments had on the ability to predict language dominance from one another. The results of these combinations are discussed below. Table 2 provides information regarding inter-test comparisons.

The Inter-American Test of General Abilities (Oral Vocabulary subtest) was compared to the Crane Oral Dominance Test to determine the ability of one test to predict language dominance as determined by the second test. This combination proved to have a 46 percent rate of agreement (+.15). However, the findings were not statistically significant, and it did demonstrate the lowest strength of association.

The Inter-American Test of General Abilities (Oral Vocabulary subtest) was compared to both the Crane Questionnaire and the Pupil Questionnaire for Language Dominance Survey. Both of these sociolinguistic questionnaires had little predictive association with the Inter-American Test of General Abilities (Oral Vocabulary subtest) at 23 percent and 26 percent agreement respectively.

When comparing the Crane Oral Dominance Test with the Crane Questionnaire and Pupil Questionnaire for Language Dominance Survey, little rate of agreement (27 percent and 21 percent agreement respectively) was evidenced. Once again, no predictive association was found. These results were not statistically significant.

Finally, when the Crane Questionnaire and the Pupil Questionnaire for Language Dominance Survey were compared they demonstrated the highest percent of agreement of all comparisons of instruments included in the study (55 percent agreement). Further, their predictive association (+.36) as well as their strength of association (+.59) correlations were still relatively low and no statistical significance was found.

TABLE 2

INTER-TEST COMPARISONS

Instruments Compared	Percent of Agreement	Lambda	Cramer's V	Significance
Inter-American Test and Crane Oral Dominance Test	46%	.00	+.15	.20
Inter-American Test and Crane Questionnaire	23%	.00	+.20	.06
Inter-American Test and Pupil Questionnaire for Language Dominance Survey	26%	.00	+.21	.05
Crane Oral Dominance Test and Crane Questionnaire	27%	.00	+.29	no
Crane Oral Dominance Test and Pupil Questionnaire for Language Dominance Survey	21%	.00	+.26	no
Crane Questionnaire and Pupil Questionnaire for Language Dominance Survey	55%	.36	+.59	no

Administrators of bilingual programs may find it important to incorporate the following findings into their policy for the placement of bilingual students:

1. The findings indicate that the group tests of language dominance included in this study reveal as much information as individual tests of language dominance. Since many programs of bilingual education are funded externally and are required to submit language dominance test

data, what are the implications of the results of this study? Since no test measures all factors related to language dominance and since no one factor is more indicative of dominance than another at this point, then perhaps it is more reasonable to identify the most efficient and economic instrument for use in public school systems. In this case then, a paper and pencil test that can be machine-scored and administered to a group, apparently will provide as much information as an individually-administered test that a trained tester must administer, analyze and score.

2. The results of this investigation demonstrated that sociolinguistic questionnaires generally substantiated opinions of bilingual judges regarding students' language dominance. Since these questionnaires are generally concise, it may be feasible to administer them to each child along with a group-administered test of language dominance in order to obtain a more precise picture of a child's language dominance. This additional information would then present a distinct perspective on the student's language use.
3. Perhaps an alternative method of assessing a student's language dominance is simply for trained bilingual judges to talk to the child. It may well be in a school district's best interest to utilize trained bilingual raters to assess the language dominance of its students. This alternative has several benefits. It may be economically sound in the long run for a school district to provide funds to train their teachers who will then be able to provide these services for the school system over a period of years at minimal costs. By having direct contact with students, raters may be able to incorporate sociolinguistic information that could not be gleaned from simple paper and pencil tests.

CONCLUSIONS

Results of the study indicated that little correlation exists between these tests and the judgments of bilingual interviewers. Further, the results suggest that there is little relationship between the tests themselves. While it is evident that more research in dominance testing is crucial, clearly the inconsistency in the results of current measures of language dominance necessitates that conclusions based on such measures may well be unreliable. With increasing populations of non-native English-speakers in the public schools, it is essential that valid and reliable measures of determining linguistic facility be developed.

While the alternatives presented above are difficult to generalize to all instruments used in the United States, they do present a viable option to current practices. If federal and state funding continues to be contingent upon such testing, it would certainly be a more efficient course to follow.

The overwhelming issue however, is the misconception under which state and federal agencies are requiring language dominance tests. Perhaps the most *effective* way to proceed in clarification of this issue would be to demonstrate at federal and state levels the inadequacies of existing measures. Proponants of bilingual education must expose the myth of language dominance testing and recommend reexamination of this criteria as a requirement for funding.

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ED212151

SEPARATE BUT EQUAL: A GOOD DEAL FOR BILINGUAL EDUCATION

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For generally political reasons (have persons made enough progress to allow for continued program funding?) or administrative reasons (has this person been put in the right classroom?), testing is one of the most often discussed issues in bilingual education. Although apparently basic issues have been discussed under such headings as validity, reliability, global versus discrete point method, dialect sensitivity, and sociocultural fairness, it is not at all clear that tests have as yet been adjusted to the principle concerns of bilingual education.

Few educators would disagree with the following general testing goals:

1. Who are SLEPs?[*]
2. How LEP are they?

It is, in the United States, a legal requirement to carry out a testing program to identity SLEPs, for they have been shown not to have equal opportunity due to the dominance of English in educational, professional, and many social settings. Therefore, SLEPs *must* be identified, and schools must show that they are turning them into SEPs (Students of English Proficiency) and providing equal education opportunity during the SEP-making process, usually involving the use of another language in the so-called content areas.

The key notion attacked here is that of *equal*, for most tests and instructional programs have implicity or explicitly treated *equal* as *same*, a notion modeled, perhaps, on earlier civil rights notions that "separate but equal" is an unacceptable educational solution.

The linguistic goal (norm) set for testing and instruction of SLEPs is always that of a monolingual, native speaker of English (hereafter MNSE). At first glance, this strategy would seem to be irreproachable. SLEPs do not have equal opportunity due to lack of ability in English. MNSEs, so long as they have no psychological or physiological impairment and no significantly distinguished social dialect, do not suffer from this inequality of opportunity. Therefore, if SLEPs were the same as MNSEs, the problem would be solved. If this is the case, we may use MNSE norms to identify SLEPs, and we may use these same norms in devising instructional programs (since they represent the desired end-product).

I think this reasoning is, at best, not properly implemented and, at worst, exactly the opposite of the conclusion that should have been drawn con-

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[*] Students of Limited-English-Proficiency

cerning the appropriateness of MNSE models for SLEP identification and programming.

The failure to implement monolingual norms accurately in testing and instruction in bilingual programs comes, at least in part, from three sources:

1. Misunderstanding of research findings in linguistics or false assumptions about the nature of language itself
2. Lack of appropriate linguistic research
3. Failure to consider relevant research

The first source of error is especially important to the determination of MNSE norms, though it is the most abstract of all the considerations. That there are MNSEs is a given. We can identify children and adults who have never been exposed, except in the most trivial ways, to a language other than English and whose English meets community expectations for elaborateness, appropriateness, and so on. However, when we try to capture the specific set of linguistic facts that characterize such persons, we are up against a problem that has always been a peculiarly nagging one for linguists. How can you do linguistics if you can't confirm the data? Our problem here is to characterize the linguistic repertoire of the MNSE, appropriately adjusted for age, social class, sex and any number of relevant social factors. (I will not follow up on this problem of "social adjustment." Socioculturally fair tests have been the point of much discussion, and I will assume—with no really good reason for doing so—that they actually exist.) Our inability to confirm the data that make up this repertoire comes, in one way, from our inability to look inside the heads of MNSEs. Why would we want to take such a surgical approach? Isn't it enough to observe the language production of MNSEs and construct generalizations on the basis of such observations? Unfortunately, we have no principled way of editing MNSE performance. How do we know which MNSE data is to be used in constructing generalizations and which is to be ignored?

Almost all linguists agree that at some level of linguistic work a certain amount of editing must be done. That is, sentences that contain false starts, interruptions, slips of the tongue, hesitation, stuttering, and so on must be weeded out (or have certain sections weeded out of them) in order to formulate a grammar. This editorial process reflects the now famous distinction between linguistic *competence* and linguistic *performance*—the difference between a speaker's tacit, internal knowledge of his or her language and actual language production. The latter, of course, may be full of the messy stuff listed above. Some modern linguists have resolved this dilemma by positing an ideal native speaker-hearer (hereafter INSH), one whose performance *always* reveals competence (though, of course, it can never reveal it exhaustively).

It should be obvious that the MNSE is the language teaching and learning equivalent of the INSH. Empirical data do not (and cannot, by definition) exist for either.

In fact, INSHs solve the problem of sociocultural differentiation at the same time they solve the problem of performance messiness. A community of INSHs is one of linguistic clones; their linguistic make-ups differ in no way. All their utterances are fully grammatical and complete, and even their opinions of one another's performances are uniformly good. That such persons do not exist (collectively or individually) makes nonsense of the idea that a MNSE or INSH may be more than a rough, primitive notion, perhaps necessary to some stage of theoretical formulation, but ludicrously empty in the sense of an entity that provides data that will confirm or disconfirm linguistic norms of any sort, whether those norms are the ones used for the basis of grammars or models of language learning.

One school of linguists, then, seems to have provided, however unintentionally, bilingual education (perhaps all language education) with a serious misunderstanding of the nature of linguistic data: a peculiar notion that it may be found pure, plastic-wrapped in some unimpeachable, absolutely correct, native-speaker form.

If we come to see that native speakers are not reducible to monolithic norms, we have won the first battle in moving towards a more realistic and appropriate use of linguistic findings in norming native speaker behavior for language learners. Unfortunately, many appropriate aspects of native speaker behavior have not been established except in a wide variety of domains and linguistic contexts. What it is that the successful native speaker does as he goes around being successful with his linguistic skill is of the greatest importance in developing tests and instructional programs based on native speaker norms. The linguist's contribution consists not so much in determining the exact grammatical composition of those linguistic forms that achieve success as in describing appropriate language strategies in a variety of interactions. Unfortunately, which strategies are appropriate to people at certain ages and in certain areas and so on, and which linguistic forms support these strategies is just beginning to be studied.

Our second problem area for evaluation and instruction—the lack of appropriate research—is especially noticeable, then, in the study of linguistic forms in the context of conversation. We have information only about such basic situational strategies as title-selection, leave-taking and greeting, telephone answering, corrections, the uses of such small functional items as *OK* within limited environments, and a number of other unsystematically selected strategies and domains. In short, we are only beginning to learn a little about the ethnography of speaking English. A great deal of such research will be important to learners of English if a native speaker model is chosen, but so little of it has been done that it cannot provide a broadly-based foundation for bilingual program testing and instruction at this time.

The third source of difficulty may be seen in recent work in linguistics that has had little or no influence on testing and instructional programs, even though it bears directly on the notion that larger linguistic units than sentences are of theoretical prominence in providing accounts of human language. Let me illustrate how failure to consider such findings could make nonsense out of a test item or evaluation process, following the general instructions (or procedures consistent with them) of the most prominent evaluation devices currently in use in bilingual programs. Suppose a test evaluates a child's response to some such question as "Where does John live?" Let's assume that the question is a natural one, that overconcern with testing is not present, that natural language usage has an optimum chance of being observed, and that local language norms are being used in the evaluation process. We are faced with the difficulty of scoring the following responses:

a) California
b) In California

c) John lives in California
d) It's John who lives in California
e) It's California where John lives
f) It's California that John lives in
g) John, he live in California

First, a) and b) are likely to be valued less than c) (explicitly stated in the *BINL* [*Basic Inventory of Natural Language*]) due to failure to use language that is "complete and explicit" (Herbert: 7). I avoid being overcritical of this, since I have claimed that we have not done enough work in the ethnography of speech of native speakers to determine the relative ranges of appropriateness of a), b), and c), all apparently acceptable answers. In tests adjusted for dialectal and sociolectal variation g) would score as well as a), b), and c) (and on tests that count morphemes or number of words per sentence, it would do better). However, d), e), and f) would do as well as or better than a), b), and c) when, in fact, d) is not a possible answer to the question. While it is true that c) through g) all contain exactly the same information units, they do not contain the same "highlighting" of information. Remember the question—"Where does John live?" Its information content is as follows:

1. There is someone named John
2. He lives somewhere
3. Where he lives in unknown

The information focus of a response to this question *must* highlight 3 above (the unknown). Therefore, the choice of d), which uses an *it* construction to focus on the item that immediately follows it, is inappropriate since it focuses on *John*, information already provided in the question. a), b), c) and g) use stress to focus on *California* and e) and f) use the *it* construction to achieve the same result. (Notice that the focus may be on *John* if the respondent disagrees with one or more of the presuppositions behind the information given in the question. Such a response as "I don't know anybody named John" focuses on *John*, but only by denying a certain assumption of the question—namely that the questioner had reason to believe that the person spoken to knew *John* [and knew unambiguously which *John* if he knew more than one] and was likely to know where he lived.)

The distribution of these focus devices is being studied, especially by those who have felt that so-called paraphrases ("optional transformations") have no explanatory value in linguistics. The notion that different forms carry different meanings is not a trivial one for language teaching and learning, and such notions may be useful not only in sophisticating the MNSE model for bilingual testing and instruction but also in providing testing strategies at much more advanced levels of proficiency.

Of course there are any number of other recent emphases in general linguistics that ought to be used or considered in the development of the MNSE norm, and an unavoidable lag always exists between theory and practice. Other research areas that may have high potential include the following:

1. Rules of conversation: Speakers seem to agree to obey certain conversational laws when talking to one another, and these are not universally distributed among languages. One such principle, for example,

says that speakers agree to provide as much information as necessary in a conversation. Jack Richards reports the following telephone conversation that shows how such a principle may be broken:

A. Hello, is Mr. Simatapung there please?
B. Yes.
A. Oh . . . may I speak to him please?
B. Yes.
A. Oh . . . are you Mr. Simatapung?
B. Yes, this is Mr. Simatapung. (Richards: 418)

In short, the telephone answerer, as soon as he knew the call was for him, was, at least in English, under an obligation to let the caller know that he had reached his goal. Not to do this breaks one or more of the "Maxims (or Principles) of Cooperative Behavior" for conversations (Grice: 1967). Just how such maxims are learned (and when) may be of considerable interest to testers and teachers.

2. Speech acts: In fact, Richards points out that the breaking of the conversation rule exemplified above is due to the answerer's inability to come up with the proper "speech act" interpretation of the caller's first sentence. Notice that the question "Is Mr. Simatapung there?" has the structure of a yes-no question, and the ordinary interpretation of such a question is something such as "*I ask you* if Mr. Simatapung is there or not." The *I ask you* interpretation (not overtly present) results from our needing to figure out what sort of sentence we have heard. How are we to understand that a sentence is a request, a threat, a promise, a command, or some other kind of act when, in fact, most sentences do not begin with such speech act identifiers as *I order you, I tell you, I request of you, I command you, I promise you*, and so on? Of course, the context of situation, the grammatical form, and the most likely interpretation provide good clues. Yes-no questions (form) that are acts of *asking* (speech act) may be referred to as direct speech acts, showing a close or usual form-act correlation. In our example, however, the caller has used the yes-no question form to make a request. In English we often avoid direct requests (I want to speak to Mr. Simatapung) since they seem peremptory or rude. Yes-no structures (or modals—I would like to speak to Mr. Simatapung) help soften such requests. In this case the *please* at the end of the yes-no question was, in fact, a formal clue that a speech act other than an *asking* was involved. Unless *please* is directly related to the request for information (. . . would you please tell me . . .), it is unusual in simple *askings*. Notice how odd *please* is in the following yes-no question, which I intend to be an *asking*, not a *request*:

A. Did you bring your swimming trunks please?
B. Why? Do you want to borrow them?

In this case, B has interpreted the *please* as a signal that A is performing some sort of *request* (the subtle thing Mr. Simatapung missed in the telephone call), and if A simply meant to enquire, he or she has employed the wrong strategy. That MNSEs have subtle rules that relate linguistic form to speech acts is obvious; how they may be used in testing (and instruction) is unknown.

3. Language variation: Some modern linguists, despairing of the fiction of an INSH, have tried to construct fuzzy or mushy rules, rules that

> more accurately reflect the more-or-less status of many linguistic items. Native speakers do not have uniform judgments about a large number of linguistic phenomena. If we can show that such things are qualitatively graded rather than invariantly identified, we should be able to account for a great deal of native speaker variation by identifying items as more-and-more (or less-and-less) one of these or those—more or less "nouny" or "verby" for example. Such characterizations would be powerful explanatory devices for much apparent variation in native speaker judgment and performance, and would help, in part, overcome the absurdity of not being able to characterize such linguistic models as native and fluent speakers of a language.

Since almost all earlier versions of a grammar demand that we say exactly what it is we have in mind in a given sentence, such reactions by fluent native speakers (presumed MNSEs) as "maybe" and "I don't really know" are most annoying (one might even say annoyingly human). The invention of the INSH is partly based on just such reactions; that is, it is not only messy performance data that makes suspect what people really do as a basis for linguistic theory, it is also the variation in reflective, carefully considered responses to questions about the acceptability of linguistic forms.

Earlier it was concluded that even maximally similar people had "different grammars" or "ideolects." Some transformational grammarians even took to the habit of prefacing any remark about the status of a form with the words "in my dialect" to show how he or she was not at all interested in the trivial facts of actual language use. (An historical note: Persons during the heyday of the transformationalist period who were interested in language variation, use, and distribution were often referred to as "cocktail party linguists.")

Rather than attributing different competences to speakers, aren't we safer assuming that certain operations are more "ordinary," more generally acceptable to native, fluent speakers if they observe certain principles, and that the further they stray from those principles, the funnier (or less ordinary) they seem? Consider the following rules:

> Modifiers introduced with *while* which contain a verb group of the shape auxiliary be + verb + ing may delete their subjects and the auxiliary be if the identical noun may be found in the clause that they modify.

For example:

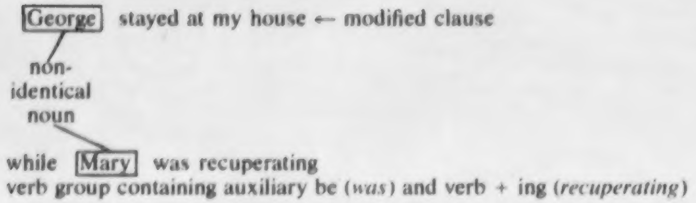
George stayed at my house ← modified clause

identical
noun

while George was recuperating
verb group containing auxiliary be (*was*) and verb + ing (*recuperating*)

Applying the above rule we get:

George stayed at my house while recuperating. (Of course, we do not have to use this rule; "George stayed at my house while he was recuperating" is an acceptable alternative.) If there is no identical noun in the modified clause, the rule will not work:


George
stayed at my house ← modified clause
non-identical noun
while
Mary
was recuperating
verb group containing auxiliary be (*was*) and verb + ing (*recuperating*)

If I do put these two sentences together with the result "George stayed at my house while recuperating" then it is clear that I no longer mean that *Mary* did the *recuperating*. That the subject of the *while*-clause must have an identical noun in the modified clause seems clear. Isn't this like most invariant linguistic rules? Can we reasonably ask if it makes any difference if the identical noun is in one place or another in the modified sentence? Does it make any difference if the modified clause is passive or active? If the identical noun is subject or object of the modified clause? Consider the following:

1. The postman was bitten by the dog while delivering the mail.
2. The dog bit the postman while guarding the house.
3. The postman was bitten by the dog while guarding the house.
4. The dog bit the postman while delivering the mail.

In (1) the subject of the *while*-clause has been deleted since it is the same as the subject of the passive clause it modifies; in (2) it is deleted on identity with the subject of an active clause; in (3) on identity with the prepositional object ("agent") of a passive sentence; in (4) on identity with the object of an active sentence. (None of these are "trick" sentences; I always mean for the dog to be guarding the house and the postman to be delivering the mail, never vice-versa.)

Research with fluent, native speakers shows that these sentences get "progressively worse," though they all satisfy the conditions of the rule given above. What are we to do? Is the rule no good? The rule, in fact, captures a good generalization about English, for some speakers (the research does not tell us on what occasions) will tolerate all four, some only the first three, and nearly all the first two. It is clear, then, that the *while* subject (and auxiliary be) deletion rule is sensitive to the position (and position in sentence type) of the identical noun in the modified clause. The rule *prefers* to work when the identical noun is in subject position (1) and (2) rather than in object (3) and (4); and it also prefers to work in passives (1) and (3) rather than in actives (2) and (4). The hierarchy of preference looks like this:

Best: +passive, +subject
Good: −passive, +subject
Fair: +passive, −subject
Bad: −passive, −subject

(Elliott, Legum, and Thompson)

Any number of categories and operations in language may be sensitive to such "preference scales" rather than to absolutist categorization. The native speaker's representation of some facts as neither "right" nor "wrong" will surely have important ramifications for a native speaker model in testing.

Although there are numerous other areas from linguistic research that might be selected to show that the MNSE model is not effectively employed, I have tried to show that misunderstandings, research gaps, and the failure to consider recent research, all contribute to an unsophisticated use of native speaker proficiency. If language testing and instruction in bilingual education continue to use the model of the native speaker, there is some chance that newer trends in linguistics will provide a more realistic model than the mysterious INSH.

Let's look briefly at some difficulties in testing that may be traced to the three areas just discussed.

First, how can an ideal versus real data base influence tests? In most cases the problem is simply ignored, though the *LAS (Language Assessment Scales)* seems to consider the problem and come up with a handy, practical device:

> The *LAS* may be administered by any teacher or other school personnel who are qualified to work with students and who *speak the language of the test as their first language*. In fact, monolinguals tend to be better testers.
>
> (DeAvila and Duncan: 5)

In short, one MNSE is taken to be an INSH for-the purpose of test production. Scoring is a little more complex, but, in general, reveals the same lack of sophistication as the above resolution:

> . . . the examiner *simply* [emphasis mine] marks the items that are failed . . . (De Avila and Duncan: 8) The scoring of Part V of the *LAS* must be done by a native speaker of the language the test was administered in. (De Avila and Duncan: 8)
>
> Raters should strive to obtain a level of interjudge reliability such that on ten ratings two independent or different raters would disagree no more than one score level, not more than one in ten ratings.
>
> (De Avila and Duncan: 9)

What a neat resolution of the INSH problem for evaluation! It may be done democratically (or through training), so that a majority of speakers will determine the linguistic competence for a bilingual measure. Although this test, like so many others, claims to be sensitive to sociolinguistic variation, it is clearly not at all sensitive to the basic issue of the status of linguistic items. It resolves the problem by making one producer an arbitrary MNSE and a statistically similar group of MNSEs (clones?) evaluators. That is, of course, a serious trivialization of a continuing problem in general, theoretical linguistics.

Second, how has the failure of linguists and others to produce comprehensive studies of language interaction in real situations influenced tests? In general, many test authors have tried to indicate that their instruments take place within a natural setting. The *BSM (Bilingual Syntax Measure)*, for example, is said to "approximate a real conversation with a student about cartoon-like pictures" (Burt, Dulay and Hernandez Chavez: 3), but "a real conversation" is a pretheoretical notion in linguistics and language study. How to approximate one is an even greater mystery. More seriously, the *BINL (Basic Inventory of Natural Language)* makes the most interesting (and least productive) use of the notion "real conversation." In that instrument a great deal of attention is paid to making sure that the setting in which the language sample is taken is "natural." And, in fact, some rather sophisticated techniques from sociolinguistics are discussed to assure that this is the case. Oddly enough, after all this care, the features of the sample that are used to determine proficiency are such completely traditional ones as word count, sentence length, and use of modifiers and so on (Herbert: 7). The relationship of such items to so-called natural settings is, first of all, not known, and, more importantly, likely to vary considerably over a variety of such natural settings. So little research exists on language use that the decision to use such items in testing is hasty and misguided.

A preliminary study by Mucha (1975), which replicates Kellogg Hunt's famous study of T-Units in developmental writing strategies (1965) for spoken English, shows that just such quantitative measures as those used in the *BINL* do *not* show significant distinctions across grade levels, though it did show significance at the level of educated adults. In a more recent study (Watson), it has been shown that just such quantitative factors as those selected for the *BINL* show more variation across genre types than across grade levels in written English. For example, such quantitative measures show more sensitivity to task type (personal narrative versus exposition versus argumentation and so on) than to grade level. However, such studies have been most common in determining the written proficiency (often referred to as "syntactic maturity") of native speakers. Some more recent studies of the relationship between syntax and discourse, perhaps powerfully productive notions, have not been explored at all in bilingual evaluation, even though they have been recently applied to language acquisition settings (Larsen-Freeman).

Third, what research exists that has not been considered in the construction of tests? I am most impressed by the failure to consider recent research on the determination of sentence elements by discourse information. Consider the following instructions for scoring from the *BINL*:

> For example, the child who says "on the table" in response to another child's question "Where are the toys?" has the phrase "The toys are . . ." within his competence. He did not say "The toys are on the table" because it was unnecessary to do so; therefore, we must assume that he was *able* to say the complete sentence but *chose* not to do so. For this reason, credit is given for a complete sentence. In assessing fluency (word count), however, we will only count those words that are actually produced, thereby placing value on complete and explicit language (Herbert: 7).

I will only hint that such complete and explicit sentences are not at all appropriate to the natural settings the *BINL* is so careful to collect in. The competence-performance distinction is apparently dealt with here in a very sophisticated way, but the final statements show us that the author really values language that is closer to so-called full structures. Most serious, of course, is the author's justification for only counting words that are actually there, "thereby placing value on complete and explicit language." Consider the following two conversations that I have reconstructed from the *BINL*:

1. A: Where are the toys?
   B: On the table.

2. A: Where are the toys?
   B: The toys are on the table.

In (1), speaker B has not "chosen" to leave out the subject and verb simply because that same information is provided in the question, or because he feels the situation is somehow "less formal." He or she has, in fact, followed a predictable discourse-syntax rule that *requires* such deletion for normal discourse. I challenge fluent speakers of English to provide a reading of B's response in (2) without having it provide special information, something quite different from the response given in (1). I can get some of the following from the "complete" answer:

1. The TOYS are on the table (but I'm getting ready to tell you about the different location of some other things that are usually with the toys and that I may reasonably expect you to believe are with them on the table, when, in fact, they are not and I don't want to trick you).
2. The toys ARE on the table (and it is so obvious that I am a little annoyed with you for asking).
3. THE toys are on the table (but they may not be the ones you meant).

It is, in fact, only the "normal" reading "The toys are on the table," with strongest but not super-strong stress on *table*, that I cannot use to answer this question since it seems to ignore the shared information the questioner and answerer have. I do know, however, that many teachers say such sentences, with uninterpretable stress and intonation patterns, and that many language learners are expected to say them. In some cases, the reason is given that deletion is easier to learn than addition and that full forms should be learned first, short forms later.

Some work in general linguistics asserts, quite simply, that differences in form add up to differences in meaning. There is enough precision and agreement in such studies to allow them to be considered for current bilingual testing devices.

You may have forgotten by now my claim that the decision to use a MNSE model for bilingual testing and instruction was a bad one. Certainly the linguistic adventure we have just taken was not wasted, for much of that sophistication will be necessary no matter what model we finally decide to employ, but it remains to be shown that native speaker norms (even when adequately characterized) are not accurate or effective models for bilingual testing and instruction.

The proof for this notion will be drawn from three general areas: neurolinguistics, general linguistics, and sociolinguistics. The arguments here are relatively straightforward; if it can be shown that successful bilinguals store, process, and use language(s) in ways that significantly differ from monolinguals, then the selection of MNSE norms for evaluation and programming is in error.

At first glance, the assumption that the brain of a bilingual differs from that of the monolingual should be so obvious as to require no proof at all. After all, a bilingual brain stores two languages, a monolingual one only one. Unfortunately, that obvious fact may be a trivial one; that is, if the two (or more) languages of the bilingual are stored in exactly the same way one is by the monolingual, then a monolingual model of a language will provide a multilingual one when multiplied by the number of languages involved.

Partial competence in a second language may be described, in this model, as a percentage of realization of the monolingual model.

Contrary to this model, considerable neurolinguistic evidence suggests that a bilingual is not a double monolingual. The best of this evidence comes from fairly recent studies of localization of brain functions, in particular the discovery that a number of language functions seem to specialize in one hemisphere of the brain (usually the left) at a certain period in one's linguistic development—a process usually referred to as *lateralization*. If, of course, a second language is stored in a different way or if the storage of more than one language "creates" a different brain, then numerous tasks, linguistic as well as nonlinguistic, may be different for bilinguals and monolinguals. If that is the case, the monolingual's behavior is an inappropriate norm for the multilingual.

Though proof of this point is not definite and a number of experiments have been criticized for details, the weight of evidence seems to fall in the direction of difference rather than similarity. A number of these general findings are simply listed here:

1. Bilinguals appear to have greater auditory language skills than monolinguals (Albert and Obler: 204)
2. Bilingual phonological production seems more articulated than phonological reception; that is, category separation is greater in pronunciation than in perception (Albert and Obler: 204-5)
3. Bilinguals mature earlier than monolinguals with regard to lateralization (Albert and Obler: 238-42)
4. Bilinguals show greater bilateralization (locating of language functions in both hemispheres) than monolinguals (Albert and Obler: 226)

Of course, a number of studies show that other skill, storage and processing areas of bilinguals are not significantly different from those of monolinguals. Since, however, evidence from at least some areas and some experimental work suggests that the neurolinguistic picture of the bilingual differs from that of the monolingual, the burden of proof for testing and instruction would seem to fall on those who claim that such differences are trivial or that they do not exist.

Within general, theoretical linguistics there is some evidence that competence-performance, particularly as it has to do with judgments of grammaticality, is distinguished in bilinguals and monolinguals. Fluent bilinguals have been shown to store different grammars, at least in terms of grammaticality judgments, by Preston (1975). Fluent Polish speakers of English and native speakers were asked to evaluate over five hundred sentences from Quirk, *et al.*, *A Grammar of Contemporary English* (1972) that were marked as "questionably grammatical." The bilinguals found a significantly larger percentage of the sentences unacceptable.

Finally, there is the greatest evidence that bilinguals are not the same as monolinguals from the point of view of sociolinguistics. At first glance this would seem to be as obvious as the difference between bilingual and monolingual brains. However, some critics might object that, viewed from one side or the other, the bilingual might be simply a member of society who possesses a clever "trick," a separate set of relationships that are irrelevant to monolinguals on either side. This is absurd for two reasons. First, other bilinguals exist, and they must have some attitudes towards a speaker that *do not regard him or her as a person with a second, mysterious life.* Second, internally, a successful bilingual does not feel himself to be two completely different persons, even though he may have "two worlds" and "two visions." His or her identity is, nevertheless, uniform. The alternative to this would be the pathological (and extremely rare) case of multiple personality. I am, however, more interested in particulars than in these general characterizations, and I am not interested in troubling this discussion with the difficulties of *compound* versus *coordinateness*, labels that I take to cover much neuro-, psycho-, socio-, and general linguistic territory.

Preston (1976) has shown that native speakers of English seem to prefer non-native speakers who do not come too close to the individual native speaker's variety. In a test with Polish learners of English who had learned British and American varieties, the native speakers of British English preferred (on affective scales) the Polish learners who had acquired American English, and the native speakers of American English preferred (on the same rating scale) Polish learners of British English. A control group who had learned what was called "Mid-Atlantic English" was, in fact, preferred by both groups of native-speaker raters. Some principle of "sociolinguistic thievery" similar to the one that explains strong reactions to non-native use of slang and obscenity may explain this.

How does this native speaker preference for non-native norms in learners influence the bilingual as he or she tries to increase proficiency? I am indebted to Professor T. Plaister of the University of Hawaii at Manoa for bringing the following composition by a Japanese student of English to my attention:

> I just don't know what to do right now. I might have been *wrong* since I began to learn English. I always tried to be better and wanted to be a good speaker. But it was *wrong, absolutely wrong*!! When I got to California, I started imitating Americans and picked up the words that I heard. So, my English became just like Americans. I couldn't help it. I must have been funny to them, because I am a Japanese and have my own culture and background. I think I almost lost the most important thing I should not have. I got California English including intonation, pronunciation, the way they act, which *are not* mine. I have to have *my own English*, be myself when I speak English. Why was it hard for me to make friends in California? Why was I unhappy? Because I faked! I pretended to be like an American just like an awful actress. Others must have noticed that. But nobody told me the truth. Everybody said I talked like an American but something was wrong with me. I shouldn't have been that way. I tried too hard to improve English—but in the wrong way. At that time, I thought it was the best way and the only way to learn how to speak English. I watched TV, listened to the radio, read the newspaper as hard as I could. I didn't think how others think about that. I believed that I would be able to think in English and talk naturally. I think I made it. But in the wrong way. I don't have to be like Americans. The most important thing is to be myself and communicate with people. I don't have to be good. It doesn't matter how others don't like me and think I am not good. It doesn't matter if I make a mistake not only in English but also in life itself. If I pretend to be like an American, nobody will like me and talk

> to me. If we just imitate others' way of speaking, I can never talk and communicate with people. Because it is not *me*, the words coming out of the mouth are not my own words. They are the words that I imitated and stole from Americans. If I really want to speak *good* English, I have to speak my own English, which might not be worse than the English that I got in California. But that's the real English for me. Don't try to be good too hard. If I am too eager, my English will become worse and worse. I am at the top of the peak. It might take long to speak in my way. But I'll try.
>
> I'm writing for myself not just for the journal. Because I talked to the local girls in my dormitory very seriously. They said they talked about me so badly because whenever I spoke English, it sounded funny, phony, not natural. . . . whatever, to them. I listened to them and took their words with the open mind. I didn't get mad, embarassed. But they made me to think about myself. They told me to be *myself* before I say something in English. What do I think? What do I like? What do I hate? Whatever it is, it's O.K.! Because that's what I am. I have to be honest to myself before to others. If I am myself when I speak English, maybe my exaggerated (that's what others have felt) tone will be taken away. That's what I am thinking after I heard their honest words about me.
>
> I should not have written this. But I'd like to express this strong feeling directly and also I'd like you to know what would happen to a student who has learned and imitated American English. It is very hard for us to learn how to speak English not just because we are shy and polite, but also because we are not taught how to communicate with other people especially foreigners. I realize how closely language is related to culture, backgrounds, and communication itself. Language is needed because we want to know other people. So we have to be curious about people, including myself. (HELP)

This learner confirms the Polish findings and helps establish the notion that bilinguals are aware of the negative feelings certain attempts to behave like monolinguals arouse. We humans seem to be most comfortable with those situations and individuals that allow the greatest predictability or stereotyping, but I hesitate attaching only negative values to that word. I would argue that language learners are sensitive to this need and isolate certain small areas of monolingual performance that they will avoid or certain areas of their own performance that will signal their bilingual status (phonology is probably a favorite due to its extremely limited interference with the communication process).

Perhaps the Polish raters of grammaticality cited above were more critical of questionable sentences partly because such sentences belong almost exclusively to the native-speaker domain of language use—the kind of grammatical risk area a native speaker would take, which the bilingual might choose to avoid. After all, the fluent bilingual has other strategies to deal with the semantic and communication strategies covered by such questionable forms.

Lest this sensitivity on the part of the bilingual to the possible devaluation by the monolingual native speaker seem to be a kind of submissiveness, let me be quick to point out that such avoidance of some native speaker forms or strategies and the continuation of some other (or dual) language forms and strategies, has positive values to the bilingual. If the strategy of the learner is not to *become* a native speaker, is it not likely that he or she will either avoid learning or carry over certain features, however subtle and however unconsciously, that suggest to the learner as well as to listeners that his or her identity is not to be confused with the monolingual? If this is the social task, what better model for it than the total language competence of the successful bilingual.

How have failures to select a bilingual norm influenced tests? In the case of neurolinguistic differentiation, it was noted that one of the advantages of bilingualism was greater auditory linguistic facility (compared to the visual facility of the monolingual). Nearly all major tests base their primary language elicitation task on pictures, just the area of monolingual strength that would not be appropriate to a bilingual if such a difference is profound.

In addition, those tests that pay attention to phonological systems at all contain measures of responses to minimal pairs (e.g., *LAS*), yet work in neurolinguistic storage of phonological systems shows that bilinguals have greater system separation at the level of production than at the level of reception.

For general linguistic theory (or grammatical descriptions) some even stronger claims may be made concerning the use of bilingual norms. I have already quoted the major tests' statements of preference for native speaker evaluation of test performances. If, however, the grammatical status of a language in a successful bilingual is different from that of a monolingual, why should a monolingual evaluator be chosen? Let's go back to an earlier illustration:

A: Where are the toys?
B: The toys are on the table.

I claimed that only unusual readings of the answer that carried significantly different meanings could be employed with this "full form," and I suggested that giving greater value to such utterances on the basis of "completeness" or "explicitness" was a direct contradiction of recent work in discourse-controlled rules in syntax. It is important to remember, however, that at that time I was criticizing the MNSE model. Is it possible that this response, and many other grammmatical forms and conversational strategies close to native speaker forms but not exactly like them, are, in fact, correct (even preferred) forms for fluent bilinguals? We do not know since we have chosen MNSE norms. Worse, we cannot know because we have done so little research on the language proficiency of fluent bilinguals.

Finally, how have tests failed by not considering the sociolinguistic status of the successful bilingual? The tests fail, of course, by not recognizing that bilinguals are bilinguals, that they occupy a different position in society, that their behavior to others and others' (both monolinguals and bilinguals) behavior to them differs. Not to assume this is to make a mockery of all previous sociolinguistic research. We adjust our linguistic behavior to others for the most subtle of reasons—barely perceptible shifts in tone, attitude; differences in sex, age, region; relocation of domain; change in topic and purpose. Of course we will vary our language use and our regard for language when we distinguish that the others in conversations are monolinguals or bilinguals.

Our tests generally overcome this difficulty since they are tests appropriate to monolingual, not bilingual education. If the norms for testing and instruction are set from the performance of those who control only one language, however accurately, then we must assume that that monolingual norm is the goal for the students. Those proponents of bilingual education who find such great value in pluralism, multilingualism, and relativistic attitudes employ, in fact, unashamedly assimilationistic models for testing and instruction.

The Japanese student quoted above discovered that she had unconsciously devised a monolingualizing program for herself, but, of course, since she knew she would return to her own country one day, she gained some rather powerful insights into the process of becoming bilingual—the preservation of self, the creation of a bilingual voice, the recognition of the absurdity of dual monolingualism. I am sure she is a successful speaker of a variety of English that will do her more good than the California English that caused her so much trouble.

I hope that bilingual programs in America will have the foresight to begin a similar plan for evaluation and instruction. Such a plan is not an automatic product of maintenance. It is a plan that calls for the most sophisticated linguistic analysis of the cognitive and linguistic differences between bilinguals and monolinguals and for the most realistic and practical applications of those findings to the testing and teaching of future bilinguals.

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ED212152

THE RELATION OF TOPIC/SITUATION SENSITIVITY TO THE STUDY OF LANGUAGE PROFICIENCY*

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This paper reports on a study comparing language proficiency as conventionally measured by instruments currently used in many school districts throughout the United States, with language abilities of individuals with Spanish language background. At the outset, it will be useful to distinguish *language proficiency* from *language abilities*, for reasons discussed in more detail below. With regard to *oral language*, which will be our only concern in this paper, *language proficiency* will be defined strictly as the results of a quantitative measure (e.g., language proficiency test) applied to a speech sample (e.g., the speech sample elicited by that test).

On the other hand, *language abilities* will be defined as what a speaker can actually do with the language he/she knows. An account of the language abilities of a speaker will distinguish what the speaker knows from what he doesn't know, the latter being the basis for deciding what the speaker needs to learn in order to achieve normally in school. Thus, a language proficiency test converts some aspects of a speaker's total *language ability* into a measured *language proficiency*.

The order of presentation will begin with *why* language proficiency and language abilities are being studied, both within the particular project discussed below and elsewhere within the context of American bilingual education. This section will deal with the general theoretical and practical issues involved in language proficiency assessment, and then with the particular aspects of language abilities emphasized in the reported project. The second part of the paper will then deal successively with some of the results of the project thus far obtained. In effect, this section contains a status report on the language abilities of the children under study with respect to some of the more striking and, in some cases, unexpected features of language behavior exhibited by the children. The particular discussion involves project-derived notions of *peer selection, language preference, language dominance*, and the relation of some specific language abilities to language proficiency testing.

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*The research reported herein was supported by the National Center for Bilingual Research through funds from NIE (NIE-R-79-0011). The opinions expressed do not necessarily reflect the position or policy of NIE and no official endorsement should be inferred.

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Theoretical and Practical Concerns in Language Proficiency Assessment

Language proficiency assessment, henceforth LPA, is a crucial part of the developing technology of bilingual education. Its most widespread use across American school systems is to classify students of non-English family backgrounds for determining eligibility and/or need for bilingual educational programs. On the basis of specific LPA instruments, students are classified as *fluent* or *limited*. The most widely used tests make further distinctions for both categories, but this distinction is the crucial one.[1]

Currently there is much debate over the relationship of LPA to school achievement, although it is generally agreed that lack of proficiency in English is at least partially responsible for the lack of academic achievement and an eventual high dropout rate among speakers from non-English backgrounds, especially Hispanics. The controversy centers around two major questions:

1. What kinds of language proficiency are related to what kinds of academic achievement?
2. What is the relative role of language proficiency among other factors (e.g., social or individual psychological), which promote or impede academic achievement?

Both of these questions are large and general. They cannot be discussed in detail here. However, it must be appreciated that the ultimate goal of research addressed to LPA in the context of bilingual education is to answer these questions, and implement a policy based on those answers.

To begin with, the question arises: What is the *content* of language proficiency? There is no agreed upon answer to this question. The scope of language proficiency is not well defined. As a point of departure, we consider the most commonly used instruments; LAS (Language Assessment Scales), BSM (Bilingual Syntax Measure), BINL (Basic Inventory of Natural Language).[2] All of these instruments are commercially produced and distributed, and have been the subject of comparative study (esp. Gillmore & Dickerson, 1979; Ulibarri, Spencer & Rivas, 1980). They all have content restricted to core linguistic components. The core linguistic components are:

> PHONOLOGY: the pronunciation and perception of linguistic sounds.
>
> MORPHOLOGY: the processes of word formation; particularly for English, the most frequently used inflectional suffixes.
>
> SYNTAX: the processes of sentence formation; the organization of words into sentences and intermediate units, i.e., clauses and phrases.
>
> LEXICON: vocabulary; the inventory of sound sequences and meanings paired into morphemes and words, especially nouns and verbs.

Each of the instruments is restricted to one or several of these components, and devises a scoring system that leads to assignment of the speakers to a category above or below a cut-off point of limited and proficient speakers.[3] For all practical purposes these instruments score by comparing the speaker's output with the equivalent standard (written) English linguistic features.[4] A particularly interesting feature of all of these instruments is that they also have Spanish versions. Thus, they also claim to measure dominance for English-Spanish bilinguals. Finally, the situational context in which these tests are administered has not been subjected to careful study, but to some extent it can be estimated through the instructions given in the manuals, our informal observations of test administration, and the simulation study in the project reported below.

One of the salient features of the administration context is that only the tester and an individual speaker are involved in verbal exchange. No help from others is allowed for the benefit of the speaker (which contrasts with some of the situations of verbal interaction reported below). This conversational pattern in the test situation of the LPA context is commonly reported for general classroom interaction between teacher and pupil. I will label this interaction pattern the *test cycle* (cf. Shuy, 1979; Duran, 1981; Sinclair & Coulthard, 1975):

A: question—e.g., What's this?
B: response—e.g., A boy playing a guitar.
A: evaluation—e.g., OK, good, that's right, etc.

The test cycle (see Figure 1) may be the outline of a more elaborate exchange, for example, where A forestalls an evaluation and prompts instead, in order to obtain a further response, probably most often a substitute for or elaboration on the first response, e.g., "What else?" (elaboration), "I can't hear you/what?/huh?" (substitute). The evaluation is not an explicitly required instruction in the manuals, but we found them commonly used to mark the end of one such episode and preceding another. The answer in the test cycle is what each test is designed to elicit and evaluate.

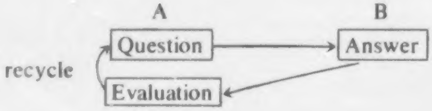


FIGURE 1

FLOW SCHEMA OF THE TEST CYCLE

In addition, the LAS adds another voice (in some sense, another participant to the situation) in the form of a taped voice. This, like other test props, such as pictures, normally intervene between a question and answer in the test cycle and not between either of the other two sequences.

We have considered this feature of the LPA administration context in some detail to draw attention to the fact that there is a specific situational context in which speech is elicited for evaluation. We will be concerned to a large extent with the effect of situational context on language. How does language elicited by the test cycle compare with language elicited or produced under different conditions?

Current Criticism of LPA Instruments.

The particular LPA instruments discussed above, and others like them, have been subject to a variety of criticisms. Several studies have shown that the various LPA instruments are not comparable. That is, they assign different proportions of the same population, and often the same individuals, to different levels of proficiency (cf. Gillmore & Dickerson, Ulibarri, et al., *op cit*, Wald: 1980).

One of the most effective criticisms of the predictive value of LPA tests for school achievement is based on the limitations of observation imposed by the content of the instruments. The basic force of arguments involving the notion of communicative competence is that academic achievement requires language-mediated knowledge and skills that are different from those tested. Studies of communicative competence generally focus on interpersonal features of classroom situations. They tend to emphasize cultural differences in interpersonal communication, and the situational sensitivity of appropriateness conditions, e.g., that talking out loud in class is appropriate on some occasions (when you're called on by the teacher), but not on other occasions (when somebody else is called on or when that decision has not been made yet).

Thus, Shuy (1979) points out that it is not appropriate to use the test cycle for questions like "What's your name?", where all known cultures would normally expect all except the most helpless members of their own societies to know their own names. As Labov (1970) has pointed out, the test cycle is initiated as a specific act, a *request for display of knowledge*. The tester is expected to know the answer to her own question by members of the test culture, hopefully including the addressee.[5]

The thrust of much work orginating in the concept of communicative competence, first proposed by Gumperz and Hymes, is that there are unconscious rules for interactional behavior, both linguistic and nonlinguistic. Through these rules, situations are changed or maintained. Gumperz has suggested that these rules are negotiated by the interactants. In a classroom context, a desired situation might be simply task-focused, quiet students. To the extent that negotiations fail, dysfunction or disruption of the desired situation may occur. Implicit in the application of the concept of negotiation to classroom situations is that knowledge of the rules used for similar purposes by each side need to be mutually known or established in order for negotiations to proceed as desired (cf. Cook-Gumperz & Gumperz, 1980).

Shuy & Staton (1980) distinguish two general areas of communicative competence: linguistic and sociolinguistic. The linguistic area deals with core linguistic features discussed above. Canale & Swain (1980) restrict *sociolinguistic* competence to interpersonal skills involving appropriateness conditions, and distinguish it from *discourse* competence, which applies to the ability to produce coherent texts, i.e., coherent multi-sentence units like recipes, telephone inquiries. They also put *strategic* competence on the same level; strategic competence being the ability to compensate for communication breakdowns caused by difficulties in other competences, or the (apparently opposite) special abilities that enhance communicative effectiveness.[6] Figure 2 below displays these two implicit taxonomies.

Currently, little is known about the relationship of these components of communicative competence to each other, or their relative weights as predictors of school achievement. Generally, core linguistic features of standard English have been emphasized as instrumental in acquiring literacy in English. In a more general way, Cummins (1981) has argued that only a limited number of linguistic and/or sociolinguistic skills are related to academic achievement; phonology is considered irrelevant (but see discussion in Wald, 1981). A major example of a relevant skill given in Cummins'

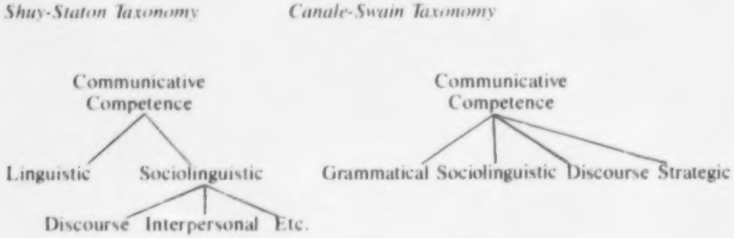


FIGURE 2

TWO BASIC TAXONOMIES OF COMMUNICATIVE COMPETENCE

papers is *lexical* parity of bilinguals with monolingual age-mates, assumed to be a prerequisite for grade level reading.[7]

Non-core linguistic skills have generally been proposed as aiding or impeding the stability of the situations in which learning takes place, particularly in the classroom, and contributing to the role of mutual expectations in student-teacher perception and interaction, which encourages or discourages academic achievement (see Troike, 1981 discussion of Cummins' work, and Wald, 1981 discussion of Troike's paper). Since little has been done in relating core linguistic to other sociolinguistic abilities in educational contexts, the question remains open concerning their relative roles in the academic achievement of bilinguals. This is an especially serious problem for socially subordinate groups in the U.S., particularly for lower SES groups of minority status.

Given this state of affairs, the shortcomings of the various LPA instruments become apparent.

1. They are limited to core linguistic features.
2. They establish a context in which very little can be learned about the relationship of core linguistic features to language use in functional contexts.

Additionally, there are a vast number of studies demonstrating that in non-school contexts language is sensitive to social context (Wald, 1980 and 1981). This applies both to quality (variety of linguistic devices used) and quantity (amount of speech).

The Situation/Topic Study

The focus of interest in the rest of this paper is on how language proficiency measures currently used to classify speakers relate to those speakers' language abilities. The study concerns three levels of organization simultaneously: core linguistic, discourse, and conversation.

Core linguistic applies to linguistic organization at the sentence level or below. It is equivalent to Shuy & Staton's linguistic competence or Canale & Swain's grammatical competence.

Discourse applies to coherent multi-sentence units embedded in conversation. It is equivalent to Canale & Swain's discourse competence. Examples are narratives, place directions, house/apartment descriptions, recipes, reports of past and present routines, speculations, and expressions of opinion and belief. These units will be referred to as *discourse units* (DUs for short) and will very much figure in the ensuing discussion.

Conversation is actual verbal exchange, organized into acts with motives and consequences. The test cycle described above is an example. This level of organization includes Canale & Swain's sociolinguistic and strategic competence.

Figure 3, below taxonomizes the aspects of language abilities of interest in the reported study, and can be compared to the taxonomies of communicative competence in Figure 2.

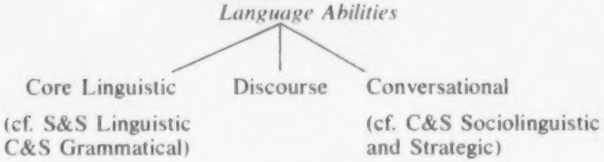

Language Abilities
Core Linguistic
Discourse
Conversational
(cf. S&S Linguistic
C&S Grammatical)
(cf. C&S Sociolinguistic
and Strategic)

FIGURE 3

TAXONOMY OF LANGUAGE ABILITIES UNDER STUDY

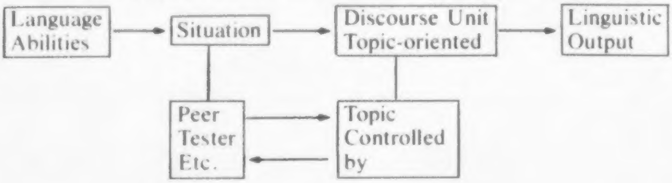
The study discussed below was specifically designed to avoid the limitations of the LPA instruments in *situation* and *topic*. The longest phase of the study design uses the sociolinguistic interview format for maximizing a speaker's linguistic output in a short amount of time, and is used extensively in community studies outside of the school context (cf. Labov, 1980, Sankoff, 1979). Unlike all conventional language proficiency testing, choice of topic is left up to the speakers, the only contraints being that we obtain the types of extended speech (discourse units/DUs) that we are interested in (see below). The assumption underlying this procedure is that the speech output of speakers is maximized when they are free to accept, reject and volunteer topics of their own choice.

In sociolinguistic fieldwork it has been demonstrated that the inclusion of peers also enhances a speaker's performance. In addition, it gives us information about peer patterns of verbal interaction that match more closely the language of everyday life than interaction with a stranger or other outsider alone (cf. Labov, 1972).

The following diagram shows in schematic form the relationship among the factors that mitigate direct observation of language abilities:

FIGURE 4

SCHEME OF THE RELATIONSHIP BETWEEN LANGUAGE ABILITIES AND LINGUISTIC OUTPUT


Language Abilities
Situation
Discourse Unit Topic-oriented
Linguistic Output
Peer Tester Etc.
Topic Controlled by

According to this scheme, *language abilities* cannot be directly observed but must be inferred from the linguistic output. The linguistic output, or speech sample data, is shaped first by *situation*, a large variable in which the relationship of the participants to each other is of prime importance, and then by the *topic-oriented discourse unit*, a variable within any particular situation affected by such factors as whether the particular topic of the discourse originates with the speaker or another participant (previous speaker, such as the interviewer or another peer), and the extent to which the speaker *controls* the information presented in the discourse unit, i.e., has knowledge of it, to a greater or less extent than other participants. For example, in the case of many narratives of personal experience, the speaker has greater, often even exclusive, knowledge of the events being reported and cannot be easily contradicted by other participants. In such a case the speaker is the authority on the content of what he is saying, even if his command of the language used is not as great as that of other participants. Speech behavior under these conditions is of particular interest since it is relatively easy to separate out limitations imposed by lack of knowledge of the language being used.

The Study of Language Abilities of Late Preadolescent Bilinguals

The study reported below is intended to help fill two kinds of gaps in our current knowledge of the relation of language proficiency to acquisitional and educational processes, as well as age group and context-sensitive use of language.

The age group selected in the study consists of fifth and sixth graders between the ages of ten and thirteen (less than thirteen in all cases). This group is older and more advanced than the K-3 groups that have been the attention of the bulk of research in bilingual education. However, this group is of critical importance to an educational process that converts young people from incipient students to either high school graduates or secondary school drop-outs. This age group stands at the gate of critical physiological, social and academic changes.

For this age group, we know very little about the sociolinguistic abilities we may expect to be developed at this point. Although there is much evidence to suggest that core linguistic abilities are highly refined before adolescence, little is known about abilities in organizing *discourse units*, or the rules of *conversation* used among peers or between peers and other age groups, particularly adults.

The relation of *core linguistic* abilities to discourse abilities has relevance to language *comprehension*, and to *reading* comprehension at the level of making inferences from a multi-sentence written text. The relation of core linguistic abilities to conversational abilities reflects ability to participate in social exchanges using language. This has relevance to *student-teacher interaction*, and whether or not the student can recognize and manipulate the academic knowledge imparted by the teacher and tested by various educational concerns from the district to the state and national level.

The specific group studied here includes a number of specific variations widespread in Hispanic communities across the U.S. For most students, the Spanish language is a feature of the immediate family background. Beyond that there is variation in (1) whether the student entered an English-speaking school at K or later—in most cases, this corresponds to age of arrival in the U.S., of which the fundamental dichotomy is *first generation* (immigrant, especially after the age of five, the year of K) and *non-first generation* (in the sample, usually second generation of Spanish-speaking parentage, entering a U.S. school at K), and (2) how the student has been officially labeled by the school on the basis of a test of language proficiency in English and Spanish (where tested).

Most of the students in the sample are from bilingual classrooms with bilingual teachers. Our major concern is to sample and describe the language abilities of these students in both languages. Below, the nature of the research and particular findings are reported.

The Effect of Situation on Language Choice and Abilities

In introducing the various situations in which we observed peer verbal interaction, with each other or with interviewers, the issue of language choice is pervasive. Language choice is directly relevant to many issues in bilingualism, including the decision-making needs of bilingual education, the issue of language dominance—which language is stronger, if this may be legitimately asked (cf. Pedraza et al., 1980)—and the investigation of abilities in each language.

In our study, one of the objectives was to obtain comparable discourse units in both languages from each target speaker. The interviewer was a twenty-six-year-old Mexican American (third generation), with equal facility in the vernacular Spanish and English spoken in East Los Angeles. Although some studies of younger bilinguals, particularly Puerto Ricans in New York City, indicate that children "follow the leader" with regard to language choice when they have ability in both, either immediately or after a few utterances by their addresser persisting in the same language (Zentella: 1978), we found that this was rarely the case among the speakers we interviewed, either at Site 1, a community and school in the southern part of Los Angeles County with approximately equal numbers of Hispanics and non-Hispanics (mostly white native English speakers), or at Site 2 (a predominantly Mexican American school and community in East Los Angeles). In many cases the absence of this "follow the leader" behavior did not imply lack of ability in the desired language, or even dominance as measured by the LPA instruments indicated on the child's school record. In pursuing this problem, we first consider certain aspects of the study design.

Speaker selection behavior

The original study design called for filling a judgment sample of limited and fluent English speakers according to the classification system used at each school. At Site 1 this was LAS, at Site 2 BINL.

Each target was required to select two peers based on friendship to bring to the initial interview, which the teacher had presented as a study of the views of life and language by the students. They were told that the interview was not a test and would not be graded. The interviews took place in a van which came to be called "the trailer."

In selecting the sample, we did not aim at a random sample, but rather allowed peers selected as initial targets to help fill the cells with their selection of two friends. Thus, the sample represents a collaborative effort between researchers and the students. In effect, then, we must study the composition of the peer groups.

A total of twelve groups, five at Site 1 and seven at Site 2, fulfill the requirements of free picking of two peers. Thus the sample consists of thirty-six speakers, twelve picked by the researchers according to English level and generation—and twenty-four picked by these twelve. The following tables show that neither fluency classification nor generation (first or non-first, in all except two cases second) is an accurate predictor of selection.

TABLE 1

Picker's choice of two peers by English level.

		Picked,	*English*	*Level*
		both L	both F	L + F
Picker	L	1	4	1
	F	2	2	2

TABLE 2

Picker's choice of two peers by generational status.

		Picked,	*Generation*	
		only first	only non-first	Both
Picker	first	2	3	3
	non-f	1	1	2

(L = labelled *limited* proficient, F = labelled *fluent* proficient, according to LPA test criteria)

Language Choice in the Initial Interview

For the groups considered above, choice of language was left up to the peers themselves in the first phase of the study. The first interview, which lasted an hour on the average, began with a section specifically designed to obtain extended speech in the form of DUs (discourse units) by each speaker. Speakers were free to initiate or reject topics, and were especially free to interact verbally with each other without the interviewer intervening, as long as the desired DUs were obtained.

The first question asked was whether the proceedings should be conducted in Spanish, English or both. The resultant answer was invariably both. The interviewer was instructed to use both Spanish and English in any way that he chose, but not to explicitly request the use of one language or the other at any point. The goal was to obtain at least three DUs in each language, if possible, but above all to keep conversation going. The requirements for a DU are a minimum of three consecutive clauses (with inflected verbs) by the same speaker on a single topic.[8]

This first phase of the study will be called *DI-1* (Discourse Interview-1). It is considered a single situation from the moment that the interviewer and the three peers entered the trailer to the moment that the interviewer left.

Under the conditions set forth for DI-1, it proved unusual to be able to elicit DUs in both languages for most speakers. Speakers generally showed an overwhelming preference for one language. For purposes of DI-1, we defined *language preference* as the language chosen by each speaker for at least 75 percent of all DUs produced by the speaker, as long as at least four DUs were produced altogether.[9]

Table 3 below shows that there is no obvious relationship between tested Spanish dominance and Spanish preference.

When we try to interpret this behavior, we are immediately confronted with the problem of situation. Language preference, as it has been defined in DI-1, is the feature of a single situation, which remains constant for setting, participants and the situational objectives determining the inter-

TABLE 3*

Comparison of speaker language preference in DI-1 to tested dominance at each site.

		Site 1 (LAS) Preference			Site 2 (BINL) Preference	
		E	S		E	S
tested dom.	E	1	—	E	—	—
	S	6	3	S	2	2
	=	2	1	=	1	—

(E = English, S = Spanish, = means same criterial fluency in both languages)

(*Site 1: insufficient speech data from two speakers, Site 2: insufficient speech data from two speakers and four speakers not tested because Home Language Survey showed English only. Most speakers had not been tested for proficiency in Spanish at any time.)

The trend is for speakers to prefer English regardless of tested dominance. The following tables show that tested level of English tends to agree with Spanish preference only for the lowest English proficiency levels.

TABLE 4

Comparison of speaker language preference in DI-1 to level of English at each site. (Cut-off point for Limited/Proficient underlined).

	Preference E	Preference S
1	—	1
2	1	2
3	3	—
4	1	—
5	4	1

Site 1 (LAS)

	Preference E	Preference S	neither
1	—	2	—
2	1	1	
3	6	2	1
4	4	—	—

Site 2 (BINL)

The best predictor of English preference is age of arrival (AOA) and implied years in a U.S. school, as indicated on Table 5 below.

TABLE 5

Comparison of speaker language preference in DI-1 to AOA (Age of Arrival), combined sites.

	Preference	
AOA*	E	S
0-5	20	1
6-7	2	4
8+	0	4

*(One no preference, two each site insufficient data).

viewer's behavior. In the following section we will examine what changes occur in language choice when the situation is changed.

Language Choice in the Peer Conference

The second phase of the study is called the Peer Conference (PC). In this situation the interviewer left the peer group alone with a task for about ten minutes. The task involved conferring on the creation of a story from a wordless comic book-like instrument of twenty-eight panels (the BSM-2 instrument). The peers were instructed to create a story in *both* Spanish and English and that the conference would be recorded.

In this phase, we recognize two basic situations both involving only the peers, on-topic and off-topic. The topic is the story in the process of creation. All utterances directly describing or narrating the pictures are *on-topic*. All other utterances, ranging from questions and commands to each other about the topic, to totally disruptive behavior, were counted as *off-topic*.[10]

Language choice in both PC situations was determined by the following criteria. The occurrence of any phrase of two or more words not uttered as a repetition of someone else's speech in the other language in either context, qualified the entire context as use of both languages. Otherwise only one language was recognized, in all cases either Spanish or English.

We consider off-topic exchanges to be of particular interest, since this context most closely resembles situations of peer interaction outside of the classroom in terms of the control the peers have over their own and each other's behavior. Independent evidence of this comes from the home language survey (HLS) information, filled out by one of each speaker's caretakers, usually the mother. We categorized the responses of the HLS into three categories; N = no Spanish mentioned (English in 3 cases, Cantonese in one), SE = both Spanish and English mentioned, S = only Spanish mentioned.

Although finer resolution of the off-topic conversation into specific acts is possible, e.g., into joking, whispering, capping, talking into the microphone, arguing, correcting, directing, etc., the HLS shows a much clearer correspondence to off-topic than to on-topic language choice.[11]

Both off and on-topic, HLS other than S speakers never used Spanish only. Although three of the four HLS N speakers were Mexican American, the convergence of evidence from all sessions and the HLS suggests that they are monolingual English speakers, for all practical purposes.

TABLE 6

Comparison of speaker language choice off and on topic in the peer conference, by report of the Home Language Survey (three speakers from DI-1 absent, all at site 2).

	HLS				HLS		
	N	SE	S		N	SE	S
off-topic				*on-topic*			
only E	4	7	7	only E	3	1	5
both	0	3	7	both	0	5	7
only S	0	0	5	only S	0	3	4

(HLS = Home Language Survey in pupil's cumulative record. N = No Spanish reported. SE = both Spanish and English reported.)

The HLS SE speakers never spoke only Spanish off-topic. They show a general tendency toward only English speech. The HLS S speakers also show a tendency toward English, but there are a number that use Spanish as well, and some that use Spanish only. The HLS SE or S speakers show a more diffuse pattern of on-topic speech to the extent that they deviate from the requested target of using both languages in the task. Further discussion of this behavior is deferred for the moment in favor of comparing language choice in the PC with the language preference exhibited in DI-1.

In comparing language choice in the PC with the language preference found in DI-1, we excluded the HLS N speakers, since they invariably used English in all situations. The results show the clearest pattern of agreement between language preference and off-topic speech (see Table 7).

TABLE 7

	Preference				Preference		
	E	S	neither		E	S	neither
off-topic				*on-topic*			
only E	14	0	0	only E	3	3	0
both	3	5	1	both	8	4	0
only S	0	3	0	only S	4	1	1

In comparing PC off-topic language choice with language preference, we note that there is a shift in both preference groups toward some use of the other language for some speakers, but no shifts entirely to the other language. In contrast, PC on-topic language choice shows some speakers shifting from preference and off-topic speech to only use of the other language.

The following generalizations are suggested by the data.

Language preference in DI-1 basically reflects the language used among the peers in a variety of situations. For those for which both S and E were indicated on the HLS, these situations also extend to the home. For those for which only S is indicated on the HLS, the situations may be more restricted or may have changed since the HLS was filled out or the HLS itself may have been inaccurate when filled out.

The bias toward English in PC off-topic speech (only five out of the thirty-six use Spanish exclusively) may be a sign of accommodation to English dominant speakers, but it remains to further social analysis of the peer group to determine to what extent this represents habitual behavior. Comparison of PC off-topic speech with DI-1 shows that DI-1 polarizes language preference for most speakers. To what extent this is a feature of the situation, especially the participation of the interviewer, as distinct from a reflection of a more general imbalance in the ability to produce extended discourses in both languages, remains to more precise sociolinguistic analysis of the type discussed in the next section. Finally, the reversal of language choice displayed by some speakers in PC on-topic reflects perception of the story construction as a school-like task. It seems that these speakers assume that a reversal of ordinary language behavior is desired. In simple terms, this suggests that these speakers considered PC on-topic to be aimed at the "harder" language.

The Second DI Session

Since DI-1 revealed a pattern of language preference that prevented fulfillment of our minimal objective of three DUs per language from all speakers (who were capable of it), upon review of each group's performance of DI-1, a second session was held in which the objective was to enrich the DU data for each speaker, and complete the objectives of DI-1.

As a consequence, DI-2 represents a different situation from DI-1. Usually, in DI-2 there were some points in each interview at which the interviewer would overtly request a change in language, as in:

Subj.: . . . I get you know two eggs n put you know lard you know on there
Inter.: which kind?
Subj.: on the pan.
Inter.: *en español, a ver ¿cómo?*
Subj.: *garro este una olla, entonces le pongo manteca, tantita manteca . . .*

Explicit directives for language choice, such as that represented above are absent in DI-1. Never in DI-2 did the interviewer intervene into a discourse more than once to overtly request a change of language. It had to be clear to the speakers that the DU was more highly valued that the language it was given in. On the other hand, once such a request was made by the interviewer he maintained the language requested for his own speech regardless of which language the peer used. This behavior was distinct from the less obvious pattern of language alternation used by the interviewer in DI-1.

The DUs obtained in DI-2 for the nonpreferred language, aid in understanding the reasons for the preferred language pattern in DI-1, and particularly, the extent to which language abilities are involved.

In the following section, we will consider in finer detail the speech behavior of the group that showed both language preference and exclusive use of Spanish in PC off-topic.

Language Behavior of a Spanish-Preference Group in DI-2.

Table 8 shows the essential social data for the three speakers involved.

TABLE 8

Social and Proficiency Test Characteristics of One Group at Site 1.

Student Age	AOA	LOR	E-LAS	S-LAS	HLS
CB 11f	6	5	2	5	S
PQ 12f	6	6	2	5	S
RM 11f	7	4	1	5	S

All these girls are classmates in a bilingual fifth grade class at Site 1, and have been to each other's houses. They consider each other good friends.

Using the same criteria as in DI-1, the contrast between the two DI sessions is displayed in Table 9.[12]

TABLE 9

Comparison of language choice in DU behavior in DI-1 and DI-2 for group of three Spanish dominant speakers.

	DI-1			DI-2		
	S	Mixed	E	S	Mixed	E
Student						
CB	7	1	0	0	4	1
PQ	11	2	0	0	7	0
RM	7	1	0	1	0	1

On the whole, the movement from DI-1 to DI-2 is away from use of Spanish alone toward mixed DUs, rather than exclusively English ones. In inspecting these DUs, we are concerned with the motives for the code-switching behavior that give rise to the mixed DUs.

The whole issue of code switching is beset with controversy and misunderstandings. First, different scholars have used the term with quite different meanings (cf. Baker, 1980; Wald, 1980a). Then, scholars have proposed a variety of motives for code switching, e.g., ethnic identification (Gumperz & Hernandez-Chavez, 1969), mitigation and aggravation of speech acts (Valdez, 1980), topic or domain (Ervin-Tripp, 1970; Fishman, 1967). Finally, and most importantly for our purposes, different scholars have drawn different conclusions about the relationship of code switching to ability in both languages. One particularly important proposal has distinguished different degrees of complexity in code switching, especially intersentential and intrasentential switching. Thus, Poplack (1978) proposes that intrasentential switching is governed by the syntactic rules of both languages, such that it is a sign of knowledge of the syntax of both languages, and thus an indication of relatively high ability in both languages. Others have proposed that intrasentential code switching can be a sign of diminished ability in at least one of the languages (Silva-Corvalan, 1980).

the languages (Silva-Corvalan, 1980).

In all cases, there is no reason to assume that all code switching is a sign of one type of proficiency, limited or fluent, since the observations of these scholars are not controlled for population or situation. That is, they are talking about different sites and different situations.

In DI-2 we know the motive for the interviewer's speech behavior in favoring one language, to try to elicit that language from the speakers, and we can use contextual cues of various kinds to develop understanding of the motives of the speakers in switching languages as they do.

> I put some oil on the frying pan n then—and then uhm *¿cómo se dice polvo—polvito ese?*

In this case the request for help is preceded by several *hesitation markers*. Closest is the filler *uhm* (not identifiable for language), and before that a *stammer* (an immediate repetition of a word or series of words lacking a syntactic relationship between successive recurrences as in reduplication: *very very good*). Finally, *uhm* marks a *cut-off* of the clause introduced by *and then*. The criterion used for recognizing cut-offs is that the clause immediately following a cut-off is not a grammatical continuation of the last clause of the preceding language. Thus, *and then* is not grammatically continued by the request for help.

In the passage above, the request for help is not counted as a clause of the DU itself. As with the on-task of the PC, on-topic DU clauses are confined to speech within the act of giving information on the topic, in this case a recipe. The request for help is a different act, one which gives a turn at speaking to another speaker, even though the DU is not finished (cf. Wald, 1978).

After a sequence of turns involving the interviewer and CB, as well as PQ, PQ continues the DU:

> Inter: Oh, they're like breadcrumbs.
> PQ: *ay le pongo de eso* (laughs) and then- and then I put the shick- the chicken . . .

For purposes of analysis of the DU, PQ's first clause is not considered a switch, since it is not immediately preceded by a clause of the DU. Her switching behavior when following another speaker does not concern us here.

There is no cut-off of P's first Spanish clause, since the clause is complete. Her laugh is not included among the hesitation markers, which are restricted to fillers, stammers and cut-offs. Thus, the shift to English is *smooth* (no hesitation marker intervening).

The following example shows a cut-off within a DU sequence.

> . . . n then I went to the uh *-a velarlo* . . . (PQ)

In this case PQ edits out the last noun phrase (NP), *the X*, and replaces it with a Spanish infinitival phrase: *prep (a) # verb + infinitive maker + object marker*. The English clause is not continued by the Spanish phrase, since the determiner *the* preceding the switch has a Spanish equivalent, and in neither language could a prepositional phrase follow a determiner directly, at least not in any known version of either language by the conventions of any known community. If the determiner had not been uttered, e.g., . . . n then I went to *a velarlo* . . . , the switch would still be marked by hesitation, a stammer across languages, through the repetition of the preposition *to*. However, either of the following two switches would have been counted as a smooth switch.

> a. . . . n then I went *a velarlo*
> b. . . . n then I went to *velarlo*

The following passage shows several smooth shifts within a DU:

> . . . he was the—the little one n *lo tenían chipilo* n stuff. *Consentido*. He was the—the best of all in the family . . .

This passage contains four shifts without hesitation marking. None of these shifts, however, imply great syntactic knowledge of both languages, according to Poplack (1978). They are restricted to switches at clause boundaries, for a tag, or for a single word. Poplack reports that the speakers of a Puerto Rican community in New York City display this kind of switching regardless of bilingual ability (by self-report), but that more intimate switching, e.g., of the type hypothetically represented in a or b is a sign of greater ability in both languages (by correlation with self-report). In a the switch is in the verb phrase between the verb and its complement, a prepositional phrase. In b the switch is in the prepositional phrase itself, between the preposition and its object—an infinitival phrase. In analyzing the DUs of the present group, we will see that switching ability shows a directional bias in terms of whether it is smooth or marked by hesitation.

Both CB's and PQ's recipes were relatively short and contained a request for help in Spanish, seeking an English equivalent for a Spanish noun. CB and PQ both made only smooth switches from Spanish to English (two for CB and one for PQ). This does not indicate any difficulty in Spanish as a motivation for the switch to English. It is more likely that the switch is motivated by the general understanding in DI-2 for this group, that English is to be used when possible. No switches from English to Spanish were smooth, nor from Spanish to English hesitant. CB and PQ both hesitated once in English before switching to Spanish.

Cut-offs were rare and confined to English. CB used no Spanish clauses at all, and had one English cut-off to five English clauses. PQ used one complete Spanish clause, and cut off one English clause to eight complete English clauses. Table 10 displays the data for recipes.

TABLE 10

Data on the recipe DUs by CB and PQ in DI-2. (S and E refer to the language switched *from*.)

	CB		PQ	
	S	E	S	E
request for help	1	0	1	0
hesitant switch	0	①	0	①
smooth switch	②	0	①	0
cut-offs before switch	0	1	0	1
total complete clauses in DU	0	5	1	8

Deserving of special attention is the pattern of switching highlighted in Table 10. The data on these short recipe DUs suggest the outline of a pattern distinguishing the languages of hesitant and smooth switches. Hesitant switches are associated with switching from English to Spanish, as if the speaker had trouble in English and therefore switched to Spanish. Smooth switches are associated with the opposite direction, from Spanish to English, as if the speaker did not switch from Spanish to English until she was able to do so smoothly.

Admittedly, the data presented in Table 10 are sparse. However, the suggested pattern foreshadows the pattern found in the much richer extended mixed narratives by the same speakers. Table 8 displays one such narrative by each speaker. The requests for help, which, whether in Spanish or English, always requested the English equivalent of a Spanish word or phrase, indicates the intent of the speakers to use English.

TABLE 11

Data on narrative DUs by CB and PQ in DI-2.

	CB		PQ	
	S	E	S	E
request for help	3	0	4	4
hesitant switch	3	⑩	6	⑲
smooth switch	⑩	5	⑭	12
cut-off before switch	3	8	3	15
total complete clauses in DU	9	71	77	67

First, note that both speakers show more hesitation before switching from English to Spanish than in the reverse direction. This pattern is foreshadowed in the limited data of Table 10. We will call this pattern, the pattern of *Spanish dominance*. Thus, both DUs exhibit Spanish dominance.

For each speaker we established another measure of the percentage of complete English clauses to attempted English clauses. Attempted English clauses are the number of complete English clauses plus the number of English cut-offs before a switch to Spanish.[13] Table 12 shows that CB shows greater maintenance of English than PQ.

TABLE 12

Percentage of completed to attempted English clauses in the narrative DUs of DI-2 of CB and PA.

	CB	PQ
% of completed clauses in English	90%	82%
N: attempted clauses	89	82

Another measure shows hesitations to attempted clauses. Hesitations are not restricted to cut-offs, but include fillers and stammers. They also occur before switches that continue a clause begun in the other language. Such clauses are not counted as a complete clause in either language:

. . . he went to the uhm *sequro*. How do you say that?
—wen' uhm to the hospital. (PQ 12f 2/5)

A comparison of CB and PQ on this behavior is shown in Table 13.

TABLE 13

Percentage of hesitations to attempted clauses in English in the narrative DUs of DI-2 for CB and PQ.

	CB	PQ
% of hesitation in English	13%	23%
N: attempted clauses	79	82

Both of the measures of Tables 12 and 13 seem equivalent.

Measures comparing the number of completed Spanish and English clauses are relevant to language ability, only if we can establish the intent of the speakers to remain in English *at all times*. We cannot do this with certainty, because of the presence of RM, whom CB and PQ consider more limited in English than themselves as shown below. Still, we can note that CB is attending to the use of English more than PQ. All of her Spanish cut-offs follow only one, or even a fraction of a Spanish word:

> . . . I don't know. *Ento*-n then he- *es que* he- he- *como se dice*? he- *bebia mucha* beer. . . .

The first switch to Spanish, *ento(nces)*, is cut in mid-word.

CB also used longer average English sequences than PQ. Here we define an English *chain* as a sequence of two or more complete English clauses in a row. CB's DU had eight English chains and one Spanish chain. PQ's DU had fourteen English chains and fifteen Spanish ones. Table 14 shows the average chain lengths for CB and PQ in both Spanish and English.

TABLE 14

Average chain lengths in Spanish and English of narrative DUs of DI-2 for CB and PQ.

		CB	PQ
average chain length	E	8.5 (N=8)	3.9 (N=14)
	S	2.0 (N=1)	4.3 (N=15)

Finally, CB shows some smooth intrasentenial shifts, whereas PQ shows smooth switches only between clauses and phrases, e.g., in the following example CB switches for more than one word inside a complex noun phrase:

> . . . *ella es la más consentida que nosotros los más* big ones. . .

The third member of the group, RM, produced only one DU in English. It was short. She never switched or overtly requested help, but was still helped so much by the other two that her DU has some appearance of a group effort.

RM: By m- my mom said that when- when I was little would- I- I was- I want to [u:]-

PQ: only wash the dishes

RM: only wash the dishes, and then my mom said when you grow bigger
you not gon' to [u:] uhm [wa- to- to like to [wash
CB: [to like to [like
PQ: [to- [to wash

RM: [the [dishes
CB: [di-
PQ: [dish

Our impression is that CB and PQ judge her not to be competent enough in English to speak without support.

To recapitulate the important points of this section: RM shows that use of English alone does not necessarily demonstrate a high level of ability in English. In some cases, it may reflect a great amount of effort not evident in speakers who will shift languages rather than interrupt their narratives when a difficulty in English arises. This appears to be the case of RM's DU. CB and PQ show that mixed utterances alone neither support nor refute a high level of bilingual ability. However, the tendency for hesitations and cut-offs to precede a switch from English to Spanish rather than in the reverse direction from Spanish to English, indicates some difficulty in maintaining English over a large number of clauses. This characteristic is associated with a Spanish dominance pattern. The *Spanish dominance* pattern exhibits a tendency for a speaker to show more cases of hesitation in English before a switch to Spanish than the reverse, and, conversely, more cases of smooth switches from Spanish to English (the target language) than the reverse.

It is also suggested that RM's behavior and her peers' reactions to it indicate that the dominance pattern of the mixed DUs displays a higher competence in the weaker language than the slower, more painstaking maintenance of English over a DU consisting of a short number of clauses. Thus, it may be stated that without further qualifications the maintenance of English does not in itself indicate a higher level of fluency in the second language than code switching with or without hesitations immediately preceding switch points.

The LPA Interview

In this final section I will discuss the relevance of some of PQ's specific English patterns to the adequacy of LPA instruments, especially the LAS and BSM.

The final phase of the study of each individual was a test-like situation that simulated some of the usual conditions of LPA administration. In this situation, each student was given a section of the BSM-1 in Spanish and English, and the story retelling task (called "pragmatic" by the test makers) from the LAS in both languages. This provided for speech in a situation similar to that which would be used for assessing language proficiency according to the conventional instruments. We can compare this with the speech obtained in other situations.

For BSM-1 we selected three pictures, which present a coherent mini-story and the associated questions since this was the longest coherent section of that test. All speakers readily understood the relationship between the panels. A female bilingual interviewer, Mexican-born but not of recognizably Mexican appearance, previously unknown to the speakers, administered the LPA fragments to each individual speaker alone. All proceedings were recorded. The order of tests followed was invariably (Spanish) BSM, LAS. This session will be referred to as LPAI (LPA interview).

Although all the HLS Spanish and Spanish/English speakers at Site 1 had taken LAS-1 in the previous six months, none could remember the taped story before it was played for them again, except for PQ, who remembered the Spanish version quite well. The other speakers at Site 1 sometimes thought the interviewer meant a story that either one of their peers or the previous interviewer had told in one of the earlier sessions, since they knew that LPAI was somehow related to the previous sessions (same trailer, recorder and microphones).

PQ shows an English pattern of verb negation that is different from either the classroom variety (standard) or vernacular used by English speakers in the community, including the peers who showed preference for English in DI-1 and PC off-topic speech. Like these other speakers she uses *don't*, *doesn't* and *didn't* as verb negators. This distinction lies in her use of *doesn't* as a past tense negator, as well as and more commonly than *didn't*. Table 14 shows the distribution of the three forms of verb negation in present and past contexts. Note that both *don't* and *didn't* are distributed according to tense in the English in a first language way, but *doesn't* tends to be used at the expanse of *didn't* for the past.[14]

TABLE 14

Distribution of verb negators according to tense in PQs narrative.

	don't	*doesn't*	*didn't*
Present	4	2	0
Past	0	8	2

Although *doesn't* is more common for the past than *didn't* in PQ's English speech, she shows some awareness that *didn't* is the past form used by other English speakers. Thus, she shows some self-correction, always in the standard direction.

> . . . they (were) working like that, and then uhm and they *doesn't*— they *didn't* know . . .

It is evident from the self-corrections that the past verb negator is not stable, and thus we suspect that PQ is in the process of changing her system, or, as it is put in the developmental psycholinguistic literature, still in the process of acquiring English as a second language.

In a study of the acquisition of the English negation pattern by native Spanish speakers, Cazden et al. (1975) found that all the speakers went through a series of predictable stages in order of *acquisition*.

1. *no* V/Aux: The Spanish (or interlanguage) structure is used, and no distinction is made between negation before V(erb) and Aux(iliary), e.g., *no talk, no is*.

2. *don't* V/Aus: The "do" form of verb negation is acquired in invariant form but V and Aux are still not distinguished, e.g., *don't talk, don't is*.
3. *don't* V/Aux *n't* distinguished in the standard way, e.g., *don't talk, isn't*.
4. Tensed and personal forms of *don't* are used in the standard way, e.g., *we don't talk, she doesn't talk, they didn't talk*.

According to this scheme PQ is in between stages three and four in verb negation.

In point of fact, the order of stages three and four implies that verbal inflections, including irregular past tenses, associated with stage four, follow the acquisition of the distinction between negation of verbs and auxiliaries. When we consider verbal inflections that are acquired in between stages three and stages four, we find that some are more developed toward a standard norm than others. Table 15 indicates that the development of the negative is closer to the level of the third person singular verb agreement maker (3S) than to the level of irregular past tense in positive contexts.

TABLE 15

Comparison of PQ's behavior for three English constructions on DI-2, (number native-like/total number possible).

3S	6/12	(50%)
Positive Irregular Past	26/34	(76%)
Negation	10/18	(56%)

This indicates that PQ's "problem" with the negative past is different from her treatment of positive irregular pasts. Since 3S is less developed toward the standard than the positive irregular past, it is likely that she doesn't recognize the 3S ending in *doesn't*.

At this point we will consider how this feature would be treated by the LAS and BSM LPA instruments, and how the data elicited by these instruments compares with PQ's language behavior in DI-2.

The BSM and LAS differ in both their elicitation and measuring systems. The *BSM* seeks specific syntactic constructions, mostly matters of morphology, especially inflectional suffixes. It tries to elicit these structures or recognize their absence by having speakers answer questions about pictures. Of the twenty-four questions probing syntactic knowledge on BSM-1, the last three alone deal with a sequence of three pictures. All the other questions deal with an isolated picture. There are actually five questions addressed to the content of the story reflected in the three pictures, but only three are scored. In looking at the speech behavior elicited for PQ using the BSM in the LPAI, all five questions were considered in order to enrich the data made accessible by the BSM. The story retelling of the LAS-1, which is scored as half of the entire LPA test, is the only section of the LAS that elicits coherent speech for scoring.

The scoring system used by the BSM and LAS are quite different. The *BSM* uses an explicit scoring system that distinguishes three classes of words. The first class consists of all single morpheme words and words composed of a root morpheme and an inflection. The presence of each of these words counts as one point. The absence of an inflection counts as minus one-half point. The second class of words consists of all irregular forms in which the combining of two underlying morphemes results in an unanalyzable surface word, e.g., *eat* + *Past* = *ate*, *foot* + plural = *feet*, etc. The standard use of these forms counts as two points. The nonstandard, and expectedly noncommunity, use of these forms counts as minus one point. The third category of words consists only of the possessive pronouns, e.g., *their*, and will not concern us any further. As this scoring system affects the feature we are interested in for PQ, the following points are assigned:

	Present	Absent
3S	+1	−0.5
Irregular Past	+2	−1
Negative	+1	−0.5

The BSM calculates a Syntactic Acquisition Index (SAI) by adding all words spoken according to the point system and dividing the resultant sum by the sum of all words if they had been used in the standard way. For our purposes we will modify the SAI by reducing the index only to the structures of interest. According to the technical manual, the negative is no longer a problem for PQ, since she uses some form of *do* + *n't* for verb negation and only for verb negation. The problem is whether *do*, *does* and *did* are used according to the standard norm.

For the communities under consideration, as in most lower SES communities, *don't* and *doesn't* are both used in third person singular subject negative contexts, but only for the present tense. The form *didn't* is invariably used for the past. Following the BSM instructions not to penalize for nonstandard (meaning community) forms, this difference is ignored. However, the use of *doesn't* for *didn't* counts as a failure to use the strong past, (a minus one point rather than minus one-half point for negative).

In comparing the speech behavior of DI-2, the LAS story retelling and the BSM segment, we used the modified BSM SAI on each of the three samples. Table 16 shows the amount of data obtained by each method. The BSM yields extremely limited data. The LAS data is also limited but contains more tokens of the features of interest. It is also note-worthy that the limited data of the LAS agrees, in frequency of marking of the irregular past tense, very closely with the more extensive sample from DI-2.

TABLE 16

Comparison of PQ's behavior for three constructions in three contexts.

	DI-2	LAS	BSM
3S	6/12 (50%)	—	1/1
Irregular Past	26/34 (76%)	5/7 (71%)	1/2
Negative	10/18 (56%)	1/1	—

Table 17 shows that when the modified SAI is applied to the LAS and BSM samples, the LAS still agrees closely with DI-2 for relevant features. On the other hand, the BSM diverges radically from both in a negative direction.

TABLE 17

Modified BSM "Syntactic Acquisition Index" for PQ's speech behavior in three contexts.

	DI-2	LAS	BSM
Modified SAI	55/101 .54	8/18 .57	−1/2 /5 −.10

Adopting the actual BSM SAI would consider all words in the utterances. This would change the raw scores and the SAI, but not their relative ordering. In addition, using the whole BSM would not substantially increase the number of possible occurences of each feature of interest or put them in a context of extended discourse. The BSM uses the test cycle pattern of conversation allowing short answers to individual pictures.

While the index rewards PQ for using the strong past appropriately, it does not distinguish the particular use with the negative auxiliary *didn't* from other uses. However, we have seen that PQ is more advanced in the use of irregular pasts in general then of the negative past. The BSM presents few opportunities for the irregular past altogether, and intersperses them with other items.

While the LAS story retelling shows a similar index to DI-2, using a measure similar to the one used on the BSM, the actual measure used, according to the LAS technical manual, is inexplicit (De Avila & Duncan, 1977). In PQ's case, assignment to level three or level four on the story retelling is unclear, although this is the critical cutoff point between limited and proficient speakers for the test as a whole. According to the manual, grammatical "errors" (nonstandard features) are more frequent at level three, but may still be present "occasionally" at level four. There is no weight given to any particular deviation from the standard English norm, nor consideration of how many cases distinguish "occasional" from "repetitive" "errors" (cf. De Avila and Duncan, pp. 18-20). The procedure is subjective and subject to biases against particular features.

For PQ, both the LAS and BSM have little value as a diagnostic tool in measuring language proficiency but for different reasons. BSM elicits too little data to establish concurrent validity with more extended speech sample, and is not representative of what the speaker can do in English. On the other hand, it has the virtue of explicit scoring methods that are lacking for the LAS. Short of developing a new, more accurate LPA instrument, it is suggested that the LAS strengthen its scoring procedures and that the BSM strengthen its elicitation procedures.

NOTES

1. LAS and BSM-1 use a five-point scale. LAS has two proficient categories, BSM one. BINL uses a four point scale with two levels of proficiency above and below the cutoff point.
2. All three LPA instruments are currently used for assessing language proficiency in the state of California, and have been provisionally approved by the State Department of Education in Sacramento.
3. LAS also includes a heavily weighed story-retelling section that is inexplicit in its quantification system. Intended as a general measure

of production and comprehension, it claims justification in interscorer reliability. De Avila (p.c.), one of the originators of the instrument, told me that he consulted with several linguists on the initial design, but could get no agreement on precise linguistic elements (features, constructions) to be chosen for a quantitative score.

4. The BSM cautions the user not to penalize for "nonstandard" (meaning vernacular or community accepted) constructions, but does not give the user adequate information on what these are (cf. criticism in Waíd, 1980).
5. The question "What's your name?" is appropriately identified as a request for information. It can be inappropriate if the requester has no right to ask, e.g., first question to a stranger, or should already know. An inappropriate answer to the question of the test cycle might be "Sorry, I don't know. I'm a stranger here myself," implying that the questioner actually didn't know the answer to her own question.
6. For Shuy & Staton these are all subcategories of sociolinguistic competence. I assume that there are no theoretical implications underlying these variant taxonomic schemes for subcategorizing everything a speaker knows about his language.
7. This is the implication of arguing that AOA and LOR interact in determining rate of acquisition of L2 Lexicon, such that older AOAs learn faster when LOR is held constant, and that this should be valued as an important factor in determining exit criteria from a bilingual program intended to transition a speaker to an all-English-speaking classroom.
8. The requirements given in the text are minimal. Further conditions that are fulfilled by discourse units require discussion beyond the scope of this paper.
9. Mixed DUs, defined as DUs with more than a single clause in Spanish, excluding quotations, which tend to preserve the original language, were rare in DI-1. They were never numerous enough for any speaker to obscure the preference pattern.
10. One of the distractions for many speakers, when left alone, was that the trailer had two rooms connected by an interior door, which was closed. Some speakers, who had not already asked the interviewer what was in the other room, would speculate about the room during the PC, and some actually entered it. There was nothing inside it except a few dead bees. In retrospect this setting was an asset for our purposes, since we were interested in obtaining as much off-topic speech as possible.
11. Three of the speakers involved in DI-1 were absent from the PCs. Five who were present never spoke on topic. This can be taken as an implicit refusal or nonacceptance of the topic.
12. The number of DUs are not comparable across the two DI sessions, since DI-1 was about twice as long as DI-2 for this group.
13. It is worth noting that English cut-offs for both speakers always consisted of two or more words, while all three of CB's Spanish cut-offs were one word or less. See further discussion in the text.
14. We excluded *I don't know* as an unanalyzed chunk, as is common practice in language acquisition studies (cf. Cazden et al., 1975).

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ED212153

DIAGNOSING THE LEARNING STYLES OF BILINGUAL STUDENTS AND PRESCRIBING APPROPRIATE INSTRUCTION

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INTRODUCTION

It is common knowledge to educators that students exhibit certain cognitive and affective behaviors that are affected by the educational environment (Grasha, 1972: Kagan, 1965; Witkin et al, 1977). Teachers in bilingual education programs instruct students who, in general, demonstrate linguistic and cultural patterns that may be unique in the context of the host society or educational institution. In the main, these teachers are specially trained to teach in two languages and two cultural milieux. In addition, bilingual teachers are expected to acknowledge the learning styles of their students when structuring the curriculum and choosing the methods and materials of instruction.

The consideration of learning styles of bilingual children by classroom teachers is actually an extension of understanding the student's cultural and linguistic background. Several researchers have found that learning style emerges from one's linguistic-cultural upbringing (Goodman, 1970; Ramirez and Castañeda, 1974). Culture and learning style, to some degree, are interrelated. It appears that children raised in the same cultural environment may exhibit certain similar ways of relating and adjusting to their environment (Lambert et al, 1979). For example, bilingual educators know that a mismatch of the language of instruction and the dominant language of the student can lead to failure or frustration in learning, as well as diminished self-concept (Saville and Troike, 1971; Andersson and Boyer, 1970). The incorporation of a student's familiar culture, that is, the ethnic culture that the student can relate to and find meaning in most readily, is important to the efficacy of the teaching-learning process (Saville-Troike, 1978). Hence, language and culture are both crucial links to enhancing learning events in the bilingual education classroom.

Just as it is an axiom of bilingual education that a student learns best in his or her mother tongue (Saville and Troike, 1971), some educators believe that students also learn best when taught in a manner that complements their learning style (Hill, 1971; Dunn and Dunn, 1975; Cohen, 1971).

The bilingual classroom teacher, however, does not have the time to research, investigate or administer time-consuming instruments that are too complex to analyze and are so abstract that they have a tenuous value for classroom application. In the following section, concepts of learning styles that may be of help to bilingual teachers are discussed. The teacher will

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find that these definitions of learning style encompass aspects that range from precise to vague, and that some aspects overlap. It should be kept in mind that learning styles are still hypothetical constructs that have been defined differently by various researchers and are still in an embryonic stage. It is the individual teacher's responsibility to draw upon those definitions or aspects that seem meaningful and workable in understanding the nature of the bilingual learner's individual needs and responding to them in the classroom. Special attention then, is given to those learning style models which the bilingual classroom teacher may be able to put to practical use.

DEFINING AND IDENTIFYING LEARNING STYLES IN THE CLASSROOM

The importance of identifying learning styles for prescriptive educational purposes has been set forth by educators and psychologists alike. Kogan (1971) notes that "New pedagogical procedures should acknowledge the interactions between the dispositions of the learner and the material, and tailor presentations to the preferred strategy of the child."

In order to try to match learning events with preferred learning modes, however, it is necessary to have a starting point to identify learning styles. Although the precise nature of learning styles has not yet been articulated, there are several models and techniques to identify learning styles that appear to be especially suited for use by the bilingual classroom teacher.

Learning Style as Cognitive Style: Field-Dependence/Independence

One construct of learning style that has caught the imagination of many investigators is that of field independence/dependence, the cognitive style identified fifteen years ago by Witkin (1967). This cognitive style model is based on observations and tests of an individual's manner of perceiving and organizing stimuli. Briefly, the field independent cognitive style is characteristic of students who are analytical and show a marked ability to discriminate details from wholes. These individuals are usually "task-oriented," and prefer working on tasks independently. Field-dependent students, on the other hand, have the capacity to view things from a global perspective. Another way of explaining the field-dependent's manner of perception is the tendency or ability to "see the forest from the trees." For field-dependent individuals or "global" thinkers, as referred to by Cohen (1969), the total context, situation or stimulus is more meaningful than its parts.

According to research conducted by Ten Houten (1971), each hemisphere of the brain is responsible for certain functions that are analogous to each of Witkin's cognitive styles. Specifically, the left cerebral hemisphere or left-brain controls analytical functions characteristic of the field-independent style, while the right cerebral hemisphere or right brain controls global processing characteristic of the field-dependent style. Another parallel to the cognitive styles of field independence/dependence is the left-brain's processing of *verbal* processes including reading, speaking and writing and the right-brain's mode of visual processing.

Ramirez and Castañeda (1974) have shed light on Witkin's research. Clarifying the point that both cognitive styles are valid, acceptable learning styles for the classroom, they reiterate the fact that traditional classrooms tend to favor the left-brain or field-independent cognitive style, as defined by Cohen (1969) and Rennel (1976). In their view, Ramirez and Castañeda (1974), recognize the need to try to remove the stigma associated with being field-sensitive and to emphasize, instead, the positive qualities of this mode of gathering information and relating to the environment. The authors point out, accurately I believe, that each cognitive style is actually more deft at different tasks. Thus, the pejorative connotation of field-dependence that is found in so much literature on the subject is misguided and misleading to the reader.

Ramirez and Castañeda (1974) define cognitive style as "modes of organizing, classifying, and assimilating information about the environment that are unique to each cultural group." They emphasize the cultural basis of cognitive style. Four significant variables they feel are related to the field-independent/field sensitive constructs are the following: (1) child-rearing or socialization practices; (2) community characteristics; (3) the student's dominant languages, and (4) the extent of family ties (especially the mother-child bond). The connection between culture and learning style is clearly delineated. Research conducted by Ramirez and Price-Williams (1974), and Ramirez and Castañeda (1974) has shown that Mexican American children, by and large, exhibit certain field-sensitive characteristics that are not usually rewarded or reinforced in traditional monolingual, monocultural classroom environments. Traditional educational environments also stress competition and independent types of learning activities placing Mexican American children who prefer cooperative, warm environments with group-oriented, personalistic activities at a disadvantage. The specific diagnostic/prescriptive technique developed to incorporate this cognitive style definition for bilingual children is elaborated upon in the next section.

Learning Style as Educational Cognitive Style (ECS)

Another approach to understanding the nature of the student's perception of the teaching-learning process is one developed by Hill (1972) termed "educational cognitive style." Hill identifies twenty-nine factors that can be observed or assessed to determine the learner's cognitive style and defines "educational cognitive style" in order to differentiate it from the purely psychological constructs that exist in the research literature. In short, educational cognitive style is a model for identifying the manner in which a student processes information provided by the environment. Each individual tends to perceive the world and to seek meaning in different ways. Hill's definition is quite expansive; however, only the three major categories in his definition are described here, in an effort to avoid the complicated terminology associated with the ECS model.

The first category of Hill's model, "symbols and their meanings," focuses upon the way a student gathers meaning from sensory input of symbols, including spoken words, written words, spoken numerical symbols and written numerical symbols. In brief, the "symbolic" orientations of the student are observed. These include a consideration of a wide array of aspects including the student's sensory preferences (auditory, visual, tactile, kinesthetic); psychomotor skills; empathic skills; level of appreciation;

esthetic sensibility; sense of personal space; ability to communicate nonverbally; ability to value. These and other aspects included in this category are observable by the classroom teacher.

The second major category of educational cognitive style is "cultural determinants." This category subsumes three related ones: "family," "associates," and "individuality." The category is especially relevant for bilingual learners of diverse cultural backgrounds. The influence of child-rearing and socialization practices, ethnic tenacity, mother-child-bond, and other cultural values could be reflected here. Culturally determined behavior patterns are identified such as a preference for working alone or with peers; a need for approval of family, teacher or peers; a respect for authority figures, and sex-stereotyping of roles.

The third major category of Hill's model is "modalities of inference." As the term suggests, this category probes the ways in which students reason. This is achieved by noting the presence or absence of different forms of reasoning; related skills are investigated, such as deductive reasoning, inductive reasoning, sense of logic, decision-making skills and problem-solving strategies.

The diagnostic-prescriptive approach associated with these three major categories of Hill's educational cognitive style are discussed in the next section.

Learning Style as Learning Style

Rita Dunn and Kenneth Dunn (1975; 1978; 1979) have developed a model of learning style that is quite lucid. Acknowledging that students respond more favorably to certain teaching styles that accommodate their learning styles, the Dunns conducted research to ascertain which components of learning style seem to affect a student's classroom performance. Their research initially turned up eighteen elements that, alone or in certain clusters, seem to shape learning potential.

The eighteen learning style elements they discovered are housed under four components. The first component is made up of "environmental" elements. These include the elements of sound, light, temperature, and design. There is a body of research that indicates the influence of these environmental stimuli on the learning event. A second component is termed "emotional." Included within this category are the elements of motivation, persistence, responsibility, and a need for structure. These stimuli seem to affect a student's responsiveness to the educational environment. The third component involves "sociological" elements. Working alone, with peers, with an adult, or some combination are the elements on which this component focuses. The fourth component, "physical" elements, includes critical perceptual strengths (auditory, visual, tactile, kinesthetic), intake (food), time of day, and need for mobility. A fifth category was recently added to the Dunns's model: "psychological" elements. These include the following psychological preferences: global/analytic, field-dependence, cooperative/competitive and reflective/impulsive. It may be that the sociological and psychological components in particular will yield key insights into bilingual children's preferred ways of learning.

The usefulness of the Dunn's learning style model for diagnostic/prescription purposes is also elaborated in the following section.

DIAGNOSTIC/PRESCRIPTIVE LEARNING STYLES INSTRUMENTS SUITABLE FOR THE BILINGUAL CLASSROOM TEACHER

Although there exists a wide array of primarily psychological instruments that purport to measure some form or aspect of learning style, the following discussion is limited to those instruments that appear especially appropriate for use by the bilingual classroom teacher. The appropriateness of the instruments is based on four basic attributes: (1) facility in administration or use by the teacher (2) ease of scoring and interpreting (3) value as a prescriptive tool (4) comprehensiveness.

Educational Cognitive Style (ECS), discussed in the previous section, can help the teacher to gather and analyze individual student characteristics that are related to academic, social, cultural and linguistic factors. According to Hill, educational cognitive style should help teachers to understand the various ways in which the student seeks meaning. An Educational Cognitive Style Map or profile can be generated through an analysis of the elements of Hill's cognitive style model delineated earlier. The applicability of the ECS mapping procedure to the bilingual education classroom has been investigated and articulated by Baecher (1973; 1975; 1976). Bilingual teachers can avail themselves of various observation or interview techniques to determine which elements of cognitive style are present in youngsters. An interest inventory, or empirical map can also yield data that can then be set forth on an ECS map or profile, which would reflect the students' strengths or weaknesses for certain orientations. Strengths are defined by Hill as those modes of behavior exhibited more than fifty percent of the time; those modes used less than twenty-five percent of the time are considered a "weakness" or a negligible area. The Cognitive Style Inventory is a self-report instrument that can be used with elementary to adult levels. It takes approximately fifty minutes to administer.

The ECS map or profile gives the teacher information that can be used in designing complementary educational environments. The results of the mapping can be translated into a Personalized Education Program (PEP). For example, if a student shows strengths or preferences in gaining meaning from peers, small group activities may be more productive for the student. If the student prefers deriving meaning from spoken symbols, then learning situations that involve listening or oral work may be called for. Tape recordings, rather than print matter, may be more conducive to retention of learning for auditory learners. If a student has a strong visual preference, then visuals should be used in teaching the weaker modalities or new instructional content. The ECS mapping procedure can also incorporate both languages used in the classroom, as Baecher (1976) has illustrated.

The ECS mapping techniques appear well suited for bilingual educators who want to design highly personalized learning sequences. The major limitations of these techniques, especially empirical mapping, are their fairly complex terminology and method of analysis, which require special training of the teacher. However, once the techniques for application are mastered, the only other time involved is in prescribing curriculum, materials and instructional methods to accommodate the diagnosed learning style features. The ECS can be used effectively to help strengthen weaker areas of cognitive skill or even to develop a "bicognitive" individual, that is, a person able to use dichotomous, flexible ways of relating to the environment, processing information, and approaching tasks.

Many elementary, secondary and post-secondary education institutions have utilized the ECS map with success as a teaching, prescriptive and guidance tool. As noted earlier, the ECS has been used successfully in determining the individual learning styles of bilingual elementary school students. For a detailed description of the methodology see Baecher in this volume.

The Learning Style Inventory (LSI)

The LSI is a comprehensive diagnostic tool that assesses the conditions under which students prefer to learn. Although it has not been standarized for bilingual populations, the Learning Style Inventory (LSI), created by the Dunns (1975), holds great promise for bilingual teachers. The LSI can be administered without difficulty to students. It has been validated for use in grades three to twelve. A class summary sheet that enables teachers to group students according to shared learning styles can also be obtained. This self-report inventory takes approximately thirty minutes to complete. The inventory consists of 104 items with rank-ordered choices. Afterwards, the instrument can be hand scored, or machine scored at little cost. Consistency scores for each item can also be obtained.

The LSI monitors critical facets of learning style, including sensory modality preferences (auditory, visual, tactile, kinesthetic), analytic/global preferences, and sociological preferences such as independent learning versus peer-oriented learning. This instrument incorporates physical and environmental elements of learning not tapped by other mirrors of learning behavior. Table 1 provides an illustration of the elements (psychological elements not included). In the bilingual classroom that requires highly personalized instruction for each child, the LSI can yield comprehensive, descriptive information with a minimum of time-consumption.

TABLE 1

LEARNING STYLE INVENTORY ELEMENTS

Environmental Stimuli	
Sound	Some people require total silence; others can tolerate minor noise; others are impervious to noise.
Light	Some students are light sensitive and can tolerate subdued lighting; others require extremely bright lighting; most seem to be relatively unaffected by lighting levels.
Temperature	While some students concentrate best in a warm environment, others work best in a cool environment.
Design	Formal surroundings (desk, chair) promote concentration for some while informal sittings are desired by others. For some, design is of no significance or its influence varies with the type of motivation felt toward the task.
Emotional Stimuli	
Motivation	Motivated students need to be told exactly what *all* expectations are for successful conclusion of learning tasks. Unmotivated stu-

	dents need to have a reason for what they are doing. They need to be shown how what they are studying is important and/or relevant to their lives.
Persistence	Persistent students work at a task until it is completed. If a problem develops, they will seek help in resolving the problem. Other students are not as persistent. Their attention span is limited and when they experience difficulties in completing tasks, they lose interest and become involved in something less frustrating.
Responsibility	Responsible students follow through on a given task, complete it to the best of their ability, and often do so without direct or frequent supervision. These students need to know teachers' expectations and have the resources necessary to complete the learning tasks. Other students lack this factor and if not prescribed into environments complementary to their learning style tend not to complete assigned work.
Structure	Structure involves the establishment of specific rules for working on and completing an assignment. It implies that certain things should be completed in a specific way within a definite time span. Structure limits the number of options that are available to a student and requires an imposed mode of either learning, responding, or demonstrating achievement.

Sociological Stimuli

Peers	Some students prefer to learn with their peers instead of with an authority figure.
Self	Some students prefer to learn alone.
Pair	Some students prefer to learn with another person.
Adult	Some students learn best when in an adult controlled sociological setting.
Team	Some students learn best when working with a team.
Varied	A variety of sociological patterns works well in some students' learning patterns.

Physical Stimuli

Perceptual	Individual learning styles are definitely affected by sensory appeals described individually below:
Auditory	Students who learn best through the sense of hearing can differentiate among sounds and can reproduce symbols, letters, or words by hearing them.
Visual	Students who learn through this sense can associate shapes and words and conjure up the image of a form by seeing it in their mind's eye.
Tactual	Students who learn through this sense cannot begin to associate word formations and meanings without involving a sense of touch.
Kinesthetic	Students who learn through this sense need to have real-life experiences in order to learn to recognize words and their meanings. Whole body activities are essential.
Combination	Students who require a combination of sensory appeals should be taught through multisensory resources.
Intake	Many learners need to eat, drink, smoke, or nibble in order to concentrate.
Time	Different people perform well at different times of the day.
Mobility	Some students need a great deal of mobility in the learning environment and need to vary their posture and location often.

The Dunns also have developed a Learning Style Profile that can be filled out based on teacher observations of the student's learning style characteristics. Comments can be noted on the profile after the LSI has been administered and scored. The LSI data can be transferred easily to the Learning Style Profile prior to prescriptive activities.

The LSI provides the teacher with accessible data that can be interpreted and translated into specific learning activities. The Dunns (1978) have elaborated highly specific individualized instructional methods and materials to match different combinations of learning style elements identified. Their entirely prescriptive approach is based on the notion that a teacher should draw upon the students' preferred style of learning in teaching or strengthening the less emphatic modes or skills. A wide assortment of approaches including contract activity packages, multi-sensory instruction packages and programmed learning sequences are explained in a step-by-step manner. Also included in their prescriptions are the creation of special learning centers, media corners, and reading areas. Other instructional techniques recommended include brainstorming, and the circle game, among others.

Teachers can use the Learning Style Inventory to gather data, or they can simply use the Learning Style Profile as a checklist to obtain descriptions of learning behaviors based on repeated observations of the students. Students who demonstrate motivation, persistence, responsibility and the need to work alone, for example, may find the contract activity package to their liking. Students who are authority or adult oriented as well as auditorily inclined may respond best to a lecture-type of teaching style. Kinesthetic leaners may respond best to games or lessons that incorporate movement activities.

The Dunns (1978), with Cavanaugh (1979), have developed charts that illustrate matching learning styles and learning environments (see Table 2). These illustrations can be helpful in providing the teacher with alternative approaches to different learning styles. The Dunns (1978) provide detailed,

TABLE 2

METHODS-FACTOR COORDINATION SHEET

METHODS	*COMPATIBLE LEARNING STYLE FACTORS (IN PRIORITY ORDER)*
CONTRACT ACTIVITY PACKAGES PROGRAMMED LEARNING	1. Need for structure 2. Visual/tactual and kinesthetic appeals/stimuli 3. Need to work alone
INSTRUCTIONAL PACKAGES	1. Tactual/kinesthetic appeals 2. Need for structure Highly motivational resource, thus sociological stimuli may not matter 3. Need to work alone or teacher-oriented
TASK CARDS AND LEARNING CIRCLES	1. Tactual and/or kinesthetic appeals 2. Visual appeals
LECTURE	1. Auditory appeals 2. Teacher-motivation (adult) 3. Self-motivation 4. Need for structure (tendency)

systematic instructions for developing appropriate educational strategies and physical environments, including learning centers, media corners, and reading areas in implementing small group techniques such as brainstorming and preparing contact activity packages, task cards, multisensory instructional packages or programmed learning sequences.

Field-Sensitive/Field-Independent Behavior Observation Rating Forms

The Field-Sensitive/Field Independent Behavior Observation Instruments were developed and used to diagnose the Mexican American child's preferred cognitive style (Ramirez and Castañeda, 1974: 167-170). These clearly structured instruments are used as observation checklists for rating cognitive styles in the general educational environment and during specific learning activities, such as a math or reading lesson. Both rating forms are quite easy to use, to score and to interpret. The categories of behavior investigated include: relationship to peers; personal relationship to teacher; instructional relationship to teacher, and characteristics of curriculum that facilitate learning. The teacher has eleven articulated behaviors to rate over a frequency scale of 1 to 5: not true; seldom true, sometimes true, often true, almost always true.

When the child has been sufficiently observed to obtain what appears to be a stable rating, the preferred learning mode can be ascertained. At this point, basic approaches to teaching and curriculum are recommended by Ramirez and Castañeda (1974) to cultivate a bicognitive learning style (171). Again, the preferred learning style is viewed as a potential bridge to internalization of the other style.

For example, results may indicate that certain students cannot manage competitive situations well. These same students, however, are highly responsive to how the teacher and classmates feel about them. For such students, encouragement by the teacher, as well as evidence of the teacher's pride in their accomplishment, may smooth the way for success and comfort in managing competitive activities.

The curriculum characteristics category of the rating scales afford the bilingual teacher an idea as to whether or not the teaching strategies, curriculum, and concepts are oriented toward field-independent or field-sensitive youngsters. In teaching the field-sensitive child, for example, Ramirez and Castañeda (1974) recommend teaching field-independent concepts and curriculum through a field-sensitive teaching style. There is no doubt that the field-independent nature of the traditional curriculum needs to be modified to service bilingual students.

The salient contribution of the Ramirez and Castañeda model, besides its clarity, is its culturally-based diagnostic-prescriptive aspects, especially geared for field-sensitive bilingual/bicultural children. Their "learning-style" observation forms offer a viable alternative for classroom teachers unskilled in the use of psychological tests, which in any case are more apropos for use by educational researchers or psychologists. Tables 3 and 4 illustrate the Child Observation Rating Forms developed by Ramirez and Castañeda (1974).

CONCLUSION

The tools and resources reviewed in this paper may prove to be of special help to the bilingual classroom teacher who has a sincere interest in de-

TABLE 3
CHILD RATING FORM
FIELD SENSITIVE OBSERVABLE BEHAVIORS

Instructions: Evaluate the child for each behavior listed below by placing a check in the appropriate column.

Child's Name Grade School Date

Observer's Name

Situation (e.g., "Math lesson"); for general or overall rating, write "Global"

	FREQUENCY				
FIELD SENSITIVE OBSERVABLE BEHAVIORS	NOT TRUE	SELDOM TRUE	SOMETIMES TRUE	OFTEN TRUE	ALMOST ALWAYS TRUE
RELATIONSHIP TO PEERS					
1. Likes to work with others to achieve a common goal					
2. Likes to assist others					
3. Is sensitive to feelings and opinions of others					
PERSONAL RELATIONSHIP TO TEACHER					
1. Openly expresses positive feelings for teacher					
2. Asks questions about teacher's tastes and personal experiences; seeks to become like teacher					
INSTRUCTIONAL RELATIONSHIP TO TEACHER					
1. Seeks guidance and demonstration from teacher					
2. Seeks rewards which strengthen relationship with teacher					
3. Is highly motivated when working individually with teacher					
CHARACTERISTICS OF CURRICULUM WHICH FACILITATE LEARNING					
1. Performance objectives and global aspects of curriculum are carefully explained					
2. Concepts are presented in humanized or story format					
3. Concepts are related to personal interests and experiences of children					

TABLE 4

CHILD RATING FORM
FIELD INDEPENDENT OBSERVABLE BEHAVIORS

Instructions: Evaluate the child for each behavior listed below by placing a check in the appropriate column.

Child's Name Grade School Date

Observer's Name

Situation (e.g., "Math lesson"); for general or overall rating, write "Global"

	FREQUENCY				
FIELD INDEPENDENT OBSERVABLE BEHAVIORS	NOT TRUE	SELDOM TRUE	SOMETIMES TRUE	OFTEN TRUE	ALMOST ALWAYS TRUE
RELATIONSHIP TO PEERS 1. Prefers to work independently					
2. Likes to compete and gain individual recognition					
3. Task oriented; is inattentive to social environment when working					
PERSONAL RELATIONSHIP TO TEACHER 1. Rarely seeks physical contact with teacher					
2. Formal; interactions with teacher are restricted to tasks at hand					
INSTRUCTIONAL RELATIONSHIP TO TEACHER 1. Likes to try new tasks without teacher's help					
2. Impatient to begin tasks; likes to finish first					
3. Seeks nonsocial rewards					
CHARACTERISTICS OF CURRICULUM WHICH FACILITATE LEARNING 1. Details of concepts are emphasized; parts have meaning of their own					
2. Deals with math and science concepts					
3. Based on discovery approach					

signing classroom instruction that is, in part, based on the individual learning styles of students. The Cognitive Style Map and the Learning Style Inventory offer the potential of tapping a multitude of behavioral, environmental, sociological and psychological aspects that affect the learning style of bilingual as well as monolingual students. These instruments have demonstrated effectiveness as diagnostic and prescriptive classroom tools either with monolingual or bilingual populations. The Field-Sensitive/Independent Child Observation Rating Forms can be used to check the learning style characteristics diagnosed by the aforementioned instruments.

Instructional design and curriculum development based on learning style identification relies on a starting point of clearly defined learning style elements. The Cognitive Style Map and the Learning Style Inventory both offer such a clearly demarcated universe of learning style attributes. The Field-Independent/Field-Sensitive Child Observating Rating Forms also constitute tools that teachers can use repeatedly to determine the existing preferred field-sensitive/field-independent cognitive style of both student and curriculum.

The conditions under which bilingual children learn most effectively have not yet been identified fully. Bilingual teachers concerned with individualizing their student's instruction on the basis of individual learning styles as well as linguistic, cultural and pedagogical needs, should be able to look forward to the practical results of efforts made to diagnose preferred modes of learning.

While there are many other instruments and techniques that can be used to mirror the learning behavior of students, those that have been discussed appear to lend themselves especially well to practical application in the bilingual education classroom. With a minimum of training or study, bilingual teachers, already burdened with extra duties, may be able to administer, score and apply the results of the CSM or the LSI in the classroom. Granted, the CSM is more difficult and undoubtedly requires special training of the teacher for mastery of its terminology and analysis. However, it's comprehensiveness and appropriateness for diagnosing the cultural parameters of the learning behavior of bilingual or minority-youth seem to make the extra effort worthwhile. As to the Field-Sensitive/Independent Child Observation Rating Forms, they can be used expeditiously to support the learning style strengths and weaknesses identified by the CSM and LSI instruments or by themselves.

When using instruments for diagnosing learning styles, the pitfall of viewing the findings as "fixed" should be avoided. By the same token the nature of self-report assessment, especially with middle-school students, always leaves room for doubt. In addition, prescriptions should not be used to reinforce only existing modes of behavior. Finally, although the instruments discussed seem to convey a certain preciseness in their definition and analysis of learning style, it should be remembered that learning style is still largely a hypothetical construct developed by researchers.

In conclusion, teachers considering learning styles should be aware of the culturally-determined values and child-rearing practices that help shape learning style, concepts of proper behavior roles, perceptions of authority figures, adults, peers and school in general. What are the cultural and linguistic concepts already familiar to the child? What conditions of learning are familiar? Which techniques of division, of handwriting have been learned in the "old" country or at home? The answers to such cultural background questions are crucial.

The teacher's quest to identify the subtle and not so subtle ways in which students perceive reality requires a grasp of the culturally unique intellectual skills and cognitive strategies the student already possesses. Hopefully those attributes of student learning style that seem pervasive and persistent can be modified or involved in developing in bilingual students a flexible learning style for confronting varying and novel situations.

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ED212154

MATCHING THE COGNITIVE STYLES OF BILINGUAL STUDENTS

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Bilingual instruction, or the use of two languages in the classroom, continues to receive increased attention among academic scholars, professionals in education, policymakers, and the press (AIR Report, 1978; Blanco, 1977; Cervantes, 1980; Cummins, 1979; Education Division, HEW, 1979; Time Magazine, 1980). Fundamental and applied research efforts are currently being directed toward satisfying various congressional mandates, among them being "improvement in the effectiveness of services for students" (Education Division, HEW, 1979, p. 8). Moreover, with the recent publication and demise of the proposed *Lau* rules (Dept. of Education, 1980), practitioners and policy makers seek the most appropriate form and procedures to instruct limited-English-proficient students. Cultural anthropology, education, ethnic studies, linguistics, psychology, and sociolinguistics, to name some of the disciplines and fields of knowledge vigorously studying the phenomena of bilingualism and bilingual education, have contributed to an accumulating body of literature.

Despite the available information and recent scrutiny, a vast array of nonorganized knowledge exists in the emerging field identified as "bilingual multicultural education." Not all of this knowledge is necessarily relevant for the specific purpose of examining the nature and classroom use of curriculum materials and bilingual pupil involvement in learning.

Certain authorities in bilingual education, psychology, and linguistics have provided general guidelines to assess the compatibility between instruction and bilingual learners. Saville-Troike (1976), for instance, has stressed that teachers (1) respect student cultural differences, (2) vary teaching techniques in a variety of learning contexts, (3) give pupils occasions to be proud of their native language and culture, and (4) consider the whole student in setting educational tasks.

In advocating "culturally democratic educational environments," Ramirez and Castañeda (1974, p. 104) suggest that materials and classroom practices be congruent with the "child's language, culture, values, modes of communication, motivation, relating to others, and preferred learning style." They recommend that a possible match might be based upon "field-sensitive" constructs and accompanying behaviors.

A more recent attempt to conceptualize the congruence between the learning style of the bilingual student and the educational task is the "interaction model of bilingual education" proposed by Cummins (1979). This model includes such dimensions as "child input" variables of cognitive-academic linguistic proficiency (CALP) and motivation to learn and maintain a language; selected background variables of length of residence and

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age on arrival (Cummins, 1980); educational treatment variables; and child process features. Through this interaction framework Cummins believes that bilingual programs won't have mixed results and will accommodate to the diversity that exists within their student populations.

Another important resource for bilingual teachers and curriculum specialists pertaining to the availability of bilingual curriculum materials and the "materials-learners match" is the report of the Educational Products Information Institute (EPIE, 1976). Although the EPIE document represents an exhaustive content analysis of more than 1,200 instructional materials, thereby facilitating the practitioner's search for suitable materials, a definite weakness is obvious. It does not set forth precise methods or techniques for determining the compatibility or "match" between bilingual pupil characteristics and the probable mode of understanding assumed by the curriculum materials or educational task under consideration. The implications in the following statement taken from the EPIE report succinctly capture this shortcoming:

> It is up to the educator to provide information on learners, information which defines the classroom setting and thereby determines the kind of materials to search for (p. viii).

A similar conclusion can be reached concerning the general and broad directions offered by researchers and authorities addressing bilingual and monolingual education (Glaser, 1977).

How, then, does the educator-practitioner identify the salient characteristics and needs of bilingual students? What are the important features of the educational environment to be included? What information will "define" the classroom setting? Based on this information, how can a "match" be determined between a bilingual student's learning style and the requirements or demands of the educational task? How can the bilingual educator systematically select, adapt, and utilize appropriate curriculum materials that will enhance the bilingual pupil's chances of success in mastering various educational tasks?

In response to these practical questions, the purpose of this article is:

1. To describe briefly a conceptual framework identified as "educational cognitive style" whereby the characteristics of bilingual learners and the modes of understanding of an educational task can be modeled and therefore matched.
2. To illustrate a technique formulated by the late Dr. Joseph E. Hill (1973b) for determining the degree of match between the educational cognitive styles of bilingual students and the mode of understanding of a famous work of Hispanic children's literature.
3. Based upon the results of the degree of match, to derive some useful and practical strategies that the practitioner and curriculum specialist might employ in augmenting the educational cognitive style of the bilingual learner and/or the educational environment in which bilingual instruction is conducted.

As employed in this article, *bilingual education* means the use of two languages as mediums of instruction at some point in a student's educational career. *Bilingual pupil* refers to any individual who will benefit from some form of systematic and coherent bilingual instruction. This use subsumes the current classifications of "English-superior," "comparably limited," and "primary-language-superior," as specified in the *Lau* guidelines (Dept. of Education, 1980, pps. 52056-52057). *Mode* means the sort of stimulus presented to the student, e.g., printed or spoken words, pictures, sounds; the *medium* is the vehicle that carries the stimulus mode, e.g., books, tapes, film (Rowntree, 1974). *Matching* means the "task of relating student capabilities, acquired knowledge, and skills," or his/her cognitive style, to particular classroom activities (Glaser, 1977, p. 77).

A major assumption of this paper reflects the position of Salomon and Clark (1977), Cronbach and Snow (1977), and Salomon (1979) respectively: different media features can facilitate learning to the extent that they "activate, elicit, or arouse in specific learners those mental strategies and processes that are relevant to the requirements of the task" (Salomon and Clark, 1977, p. 104). Additionally, Cornbleth (1979, p. 2), in her summary of the research on the compatibility between curriculum materials and student learning, reiterates a similar position taken in this article concerning the significance of other characteristics of curriculum materials besides content to be covered. She cites the "use of specialized materials" (Brophy and Evertson, 1979), the "motivational qualities of materials" (Cooley and Leinhardt, 1978), the "difficulty levels of materials" (Fisher and others, 1978) and the Annehurst Curriculum Classification System (Frymier, 1977), as recent evidence of the importance of curriculum materials on classroom practice. This assumption and accompanying studies challenge the educator to differentiate these potential media attributes and exploit them for their interactive and instructional effectiveness. The suggested technique being proposed for determining the match between the student's style and educational task is derived from an "educational cognitive style" perspective.

Conceptual Framework of Educational Cognitive Style

"Educational cognitive style" is a construct that refers to how an individual searches for meaning. It is an individual's disposition or tendency to use certain modes of understanding to derive meaning from personal experiences and environment whether structured or informally approached. Educational cognitive style includes its own set of terms, concepts, principles, and procedures that pertain to the educational sciences (Hill, 1968; Baecher, 1976a). In this manner it can be viewed as a "model," i.e., a general conceptual scheme that identifies the complex variables that should be attended to when considering variables that might be included in exploratory studies of particular phenomena. This particular use of "model" is distinguished from "formal structural" models and "statistical" ones, respectively (Cooley and Leinhardt, 1978, p. 5). Furthermore, as a conceptual framework, educational cognitive style is different from other theoretical approaches such as "psychological cognitive style" (Laosa, 1977; Witkin et al., 1977; Witkin, 1978).

Joseph E. Hill (1981) the originator of this conceptual scheme, maintained that the educational sciences provide a "conceptual and scientific language for the applied field of education," thereby making possible the articulation of phenomena and problems related to education, which is viewed as a process of searching for meaning (Hill, 1968, 1973a, 1975). As formulated by Hill and his associates, there are seven educational sciences comprising a common language for the applied field of education:

1. Symbols and their meanings.
2. Cultural determinants of the meanings of symbols.
3. Modalities of inference.
4. Educational memory.
5. Cognitive styles of individuals. (This "science" includes the first four "sciences.")
6. Student, teaching, administrative, and counseling styles.
7. Systemic analysis decision making.

These seven sciences are continually being investigated and employed in bringing precision to the resolution of educational problems including those of special concern to bilingual instruction and attributes of media (Baecher, 1973, 1976a, 1976b, 1977; Crookes, 1977; DeNike, 1973; DeNike and Strother, 1976; Gray, 1976; Hauser, 1975; Molina, 1976; Strother, 1973).

As defined by Hill (1981), the educational science of cognitive style is a Cartesian product, *G*, comprised of four sets, S, E, H, and Y: G=SxExHxY, where *S* indicates the set of elements defining symbols and their meanings, *E* represents the set of cultural determinants of the meaning of symbols, *H* denotes the set of elements comprising modalities of inference and *Y* refers to the set of elements belonging to educational memory.[1] Because of the speculative nature of the fourth set, *Y*, "Educational Memory," it will not be described in this article. For a more exhaustive study of the educational sciences, including the latter science, the reader may want to consult the bibliography compiled by Berry, et al. (1975), Hill (1975; 1981), Nunney, (1975) and other materials notes in the reference list.

A brief description of the Cartesian product, G = S x E x H, or the first three educational sciences, will enable the reader to become familiar with the attendant language of educational cognitive style. Appendix A, "Dimensions of the Cognitive Style Map," provides a more complete guide to the various elements under consideration in this conceptual framework.

Symbols and their meanings, *Set S*, is concerned with symbols. Two types of symbols, theoretical (e.g., words and numbers) and qualitative (e.g., sensory, programmatic, and codes), are created and used by individuals to acquire knowledge and derive meaning from their environment and personal experiences. Theoretical symbols differ from their qualitative symbols in that the theoretical symbols present to the awareness of the individual something different from that which the symbols are: the word "cat" and the number "3" are examples of theoretical symbols. Qualitative symbols are those symbols that present and then represent to the awareness of the individual that which the symbols are. Examples of meanings conveyed by qualitative symbols are feelings, commitments, and values. Inspection of Appendix A shows twenty-four elements belonging to *Set S*, symbols and their meanings.

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[1] A Cartesian product is a particular type of space or set of elements whose elements may be combined into profiles defined over that space. The "x" sign does not denote any algebraic or numerical operations; it indicates that the elements from the four sets, S, E, H, Y, must be combined to determine the exact reference points of each four-element profile in space. A cartesian product, then, is a display of elements, which, when combined, comprises an individual's various cognitive style profiles (Adapted from Wasser, 1971).

The cultural determinants of the meanings of symbols, *Set E*, identifies who influences an individual's interpretation of the information obtained from *Set S*. Essentially, three generic role sets define the social context within which educational activity takes place. They are: (1) associates (A), interpreting symbolic information predominantly as one's associates or peers do; (2) family (F), the influence of members or surrogates of family on the meanings of symbols; and (3) individuality (I), interpreting symbolic information predominantly from one's own perspective independently arrived at. *Set E*, then, has organizational implications such as small peer group interactions, large or small groups of teacher or teacher assistant directed instructional activities, self-instructional types of learning events, programmed learning, and independent study. Appendix A lists three elements belonging to *Set E*.

Modalities of Inference, *Set H*, focuses one's attention on the methods of reasoning patterns an individual uses in making decisions or reaching conclusions about the information that has been gathered through *Sets S* and *E* respectively. Five elements comprise this set: (1) magnitude (M), inductive reasoning process that uses norms, rules, definitions, and categories to draw conclusions; (2) difference (D), meaning one-to-one contrastive or comparative reasoning; (3) relationship (R), referring to a method of thinking that synthesizes a multitude of relationships between two or more characteristics; (4) appraisal (L), inductive reasoning process that employs all three of the previous approaches giving equal weight to each (i.e., magnitude, differences, relationships); and (5) circle (K), deductive reasoning or logical proof that yields a necessary conclusion derived from given information or premises. Reference to Appendix A shows five elements belonging to *Set H*.

The educational cognitive style of an individual, then, encompasses numerous elements (forming profiles across the four sets of S, E, H, Y) that manifest the individual's unique search for meaning and the manner in which an educational task is approached. Figure 1 portrays the forty-one elements of educational cognitive style presently under consideration in the educational sciences.

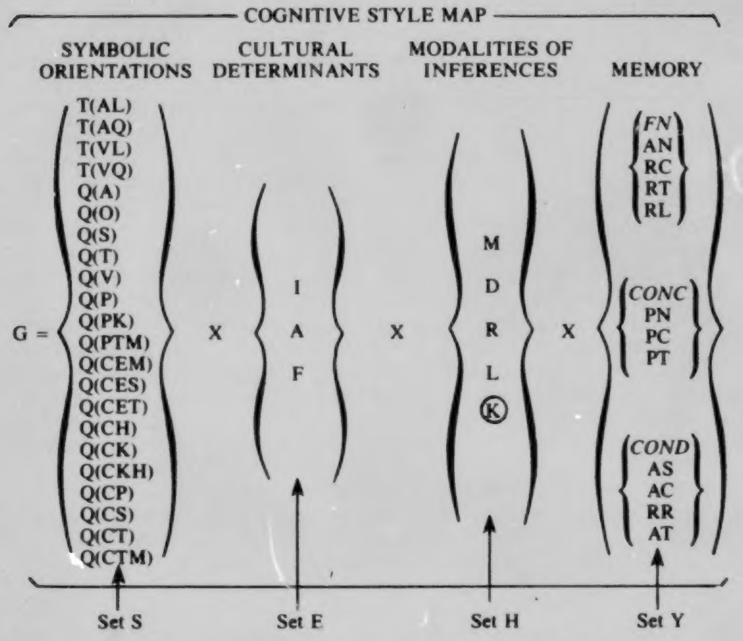
These three areas of exploration, Symbols and their Meanings, Cultural Determinants, and Modalities of Inference, constitute the educational cognitive style of bilingual students for the purpose of this article. These three sets, forming a Cartesian product, can direct the practitioner in what to look for in bilingual pupils, materials, and other classroom resources. The direction can be either intensive and/or extensive. Taken together, these three "sciences" help to answer the question, "How does the bilingual pupil come to know?" and indicate the variety of profiles such students utilize in their efforts to be successful at educational tasks. Ascertaining the educational cognitive style of an individual results from one's involvement in the process called "cognitive mapping."

Cognitive Mapping

This process entails finding out if a certain element is present in a bilingual pupil's cognitive style. Cognitive mapping involves persons, knowledgeable

FIGURE 1

Educational cognitive style map. (Adapted from Radike, 1973, p. 15)


COGNITIVE STYLE MAP
SYMBOLIC ORIENTATIONS
CULTURAL DETERMINANTS
MODALITIES OF INFERENCES
MEMORY
G =
T(AL)
T(AQ)
T(VL)
T(VQ)
Q(A)
Q(O)
Q(S)
Q(T)
Q(V)
Q(P)
Q(PK)
Q(PTM)
Q(CEM)
Q(CES)
Q(CET)
Q(CH)
Q(CK)
Q(CKH)
Q(CP)
Q(CS)
Q(CT)
Q(CTM)
X
I
A
F
X
M
D
R
L
K
X
FN
AN
RC
RT
RL
CONC
PN
PC
PT
COND
AS
AC
RR
AT
Set S
Set E
Set H
Set Y

in the educational sciences framework, making classifications of educational cognitive style elements of one set into two (or more) "logical" categories included in a second set on a "makes sense" or "does not make sense" basis (Hill, 1970).

Two types of cognitive mapping have been identified: *mathematical* and *empirical* mapping. Mathematical mapping or the application of only the theoretical symbols of mathematics or abstract logic to accomplish a decision, means literally translating test data into a written map or cognitive style profile. However, cognitive mapping involves much more than the literal, mechanical interpretation of a mechanical map. It includes the use of information about a student derived by the knowledgeable teacher through observation and conversation. Empirical mapping, then, involves the human judgments of "educational scientists" who combine test and observational data in determining one's cognitive style. This distinction is crucial to the cognitive mapping process because:

> Although mathematical mapping results in a useful profile of a student, empirical mapping allows the educator or counselor to alter the cognitive style map to reflect a student's preference or attitudes in a particular context. Considerations of the context within which a map is

> interpreted (e.g., the particular educational task and setting) is crucial to valid use of the map (The American College Testing Program, 1978, p. 7).

Cognitive mapping, therefore, consists of discovering ways to observe, listen to, and elicit cognitive style elements. The use of standardized tests, paper and pencil devices, criterion referenced instruments (all illustrations of mathematical mapping), various observational techniques, and interviews are some methods that can be employed in the process of cognitive mapping.

Mapping occurs only after the practitioner has tried to find out if an element is present in the bilingual student's style, has determined whether the element has a "major," "minor," or "negligible" rank, and has recorded the element on a form. To illustrate certain aspects of cognitive mapping, suppose that a practitioner is involved in mapping a student's cognitive style. The teacher includes in each set of information, *Set E, H, S*, comprising the student's style elements that the teacher knows to be present, having observed defined behaviors exhibiting these elements by the pupil. The following map-profile is thus recorded:

$$\begin{array}{cccccc} & \textit{Symbolic orientations} & & \textit{Cultural determinants} & & \textit{Modalities of inference} \\ g = & \left\{\begin{matrix} \overset{3}{T}\,(VL_s) & \overset{2}{T'}\,(AL_e) \\ Q\,(CEM) & \end{matrix}\right\} & X & \left\{\begin{matrix} I \\ F' \end{matrix}\right\} & X & \left\{\begin{matrix} M \\ R' \end{matrix}\right\} \end{array}$$

Without defining at this point what these symbols mean, the following steps in recording such a profile are important (Radike, 1973, pp. 16-18).

The first set—"Symbolic Orientations"—contains "theoreticals" (T's) in the top row, and "qualitatives" (Q's) under each T, thereby forming two columns in the first set. The subscripts, e and s, mean that these elements were probed by English and Spanish instruments, respectively. The numerals above the "theoreticals" refer to the grade level of educational development in that specific element, e.g., $T'^{2}(AL)_e$ means second grade English listening ability. These levels are expressed in terms of composite grade levels involving measured abilities in vocabulary, language usage, and reading and listening comprehension in home Spanish and English (Baecher, 1973, pp. 64-73). The "qualitative" elements were probed through paper and pencil instruments and/or observation and conversation.

In the second and third sets, elements are placed in a column.

$$\left\{\begin{matrix} I \\ F' \end{matrix}\right\} \quad X \quad \left\{\begin{matrix} M \\ R' \end{matrix}\right\}$$

In the examples shown above, the prime mark (') next to certain elements denotes a "minor" orientation for an element of a given set. A "major" orientation in an element is written in capital letters only, e.g., T (VL), while a "minor" orientation in an element has a prime mark (') after the notation, e.g., T'(AL).

According to Hill (1971), the cognitive style elements belonging to each set must be interpreted in terms of binomial combinations. For example, the two theoretical symbols—T (AL), T (VL)—are always in binomial combinations with one of the sensory, programmatic or cultural codes (qualitative symbols), e.g., Q (CEM). Stated differently, there is no such reality as a pure theoretical symbol or experience; all theoretical symbols must have a degree of reciprocity with a qualitative experience. A convenient explanation of this would be that a T $(AL)_s$, someone who acquires meaning predominantly from spoken Spanish words, would be combined with a Q (A) element, or the ability to gain meaning from sounds. In this case, the speaker's words as well as intonations and rhythm of voice would give meaning to what was being said. These binomial combinations, furthermore, can be expressed as manifesting magnitude and direction (Wasser, 1971, p. 31).

Educational cognitive style elements can be observed and determined as exhibiting varying degrees of strength. These can be ranked on a 1-9 point scale as shown in Figure 2 (Nunney, 1975, p. 20). Employing data derived from various observational techniques, rating scales, interviews and standardized instruments, a teacher can ascertain the strength of a cognitive style element under consideration by using this nine-point scale and the following principles[2] (Baecher, 1973, pp. 77-79; Hill, 1970).

Principle I. If the bilingual student whose style is being mapped demonstrates an element to the extent that the teacher is willing to place that student in the 50-99th percentile range, i.e., in the top half of the population exhibiting such an element, then a *major* orientation in the element under consideration could be assigned to that pupil.

Principle II. If the degree of presence of the element is of such a nature that the teacher could only place it in the 26-49th percentile range of the population, a *minor* orientation is assigned.

FIGURE 2

Percentile ranges for major, minor, and negligible orientations (From Nunney, 1975).

0-25		26-49		50-99				
1	2	3	4	5	6	7	8	9
Negligible		Minor		Major				

Principle III. If the teacher is willing to place the pupil in the 0-25th percentile range of the distribution, then the student will receive a *negligible* orientation in this element. It must be noted that a negligible orientation does *not* mean nonexistent, but rather that the element lacks significant strength in the style of the bilingual student.

Cognitive mapping, therefore, entails the use of a common language and concepts, a set of principles and rules, and a variety of instruments and techniques, the most important being the knowledge, sensitivity and originality of the teacher. Radike (1973, p. 42) asserts that "anyone who has critically observed children in a classroom, examined their work, listened to their remarks, and pondered on the interactions of students has much of the professional training necessary to map students."

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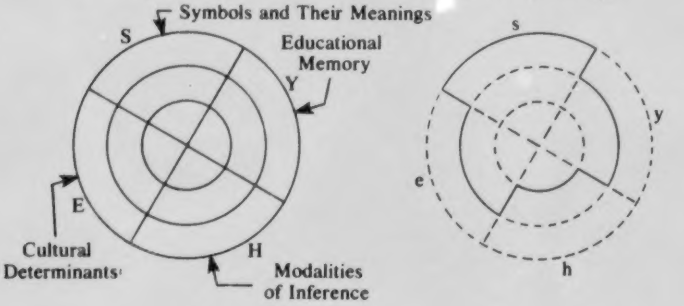
[2] These principles are a modification of Flanagan's suggestion (1939) that the lower 27 percent of a frequency distribution, and its upper 27 percent, form the "low" and the "high" groups, respectively, of an array (Hill, 1970).

The dynamic features of educational cognitive style can be portrayed by a visual representation (Figure 3) showing the interrelationships among the four educational sciences and the derivation of an individual's cognitive style map profile. In Figure 3a, each sector of the circle refers to a particular educational science, i.e., Symbols and their Meanings, Cultural Determinants, Modalities of Inference, and Educational Memory. The circular lines within each sector refer to the degree of orientation or presence of each cognitive style element, i.e., major, minor, or negligible orientation. Figure 3b represents the Cartesian product of *one* individual's cognitive style map profile, g = s x e x h x y, i.e., a Cartesian product composed of subsets of elements from sets S, E, H, and Y of G (considered the universal set).

FIGURE 3

Interrelationships among four educational sciences (G = S x E x H x Y) and derivation of cognitive style map profile of a particular individual (g = s x e x h x y)


a. Educational Cognitive Style
(G = S x E x H x Y)

b. Individual Cognitive Style Map Profile
(g = s x e x h x y)

Technique For Matching Cognitive Styles and Modes of Understanding

In the application of the educational cognitive style framework, the bilingual practitioner and educational researcher are encouraged to participate personally in the process of observation, assessment, interpretation, and mapping (Hill, 1973b). The technique suggested here enables one to determine the degree of match between the "style" of an individual and the "mode" required by the educational task. Knowledge of the bilingual's educational cognitive style and the mode of understanding assumed by bilingual education can prove to be most beneficial in the practitioner's efforts to diagnose, prescribe, motivate, and instruct bilingual students.

The "matching" technique suggested here is illustrated in terms of a step-by-step procedure or set of decision rules, for determining the degree of match between the "style" of a bilingual student with the mode of understanding required by a given "task."

Suppose a teacher wants to increase the reading achievement and appreciation of the ethnic heritage of bilingual learners through the medium of children's literature. Ada and Del Pilar (1976, pp. 65-66) have summarized its important function in bilingual education:

> a la literatura infantil se une un amplísimo acervo de tradiciones orales, en todas sus formas, que permitirán ampliar el vocabulario del niño, le brindarán nuevos patrones lingüísticos, le presentarán nuestros valores, le entregarán su tradición.
>
> children's literature brings together an abundant source of oral traditions in all forms, allowing the child's vocabulary to expand, offering him new linguistic models, introducing our values to him, and delivering him to his tradition. (author's translation)

Children's literature, therefore, includes the essential elements that define bilingual education, thereby providing an excellent vehicle for instructing in a bilingual mode. The story that was selected for analysis of its mode of understanding is the English version of *Santiago* by Pura Belpré (1969). While other content analyses of this story are possible, the one used in this article is for illustrative purposes only.

Briefly, the story describes a Puerto Rican boy named Santiago and his efforts to convince his classmate Ernie about the existence of his pet, Selina. Selina is a beautiful hen that Santiago had to leave behind in Puerto Rico when his family moved to New York. Through different episodes, Santiago did finally convince Ernie and gained a new friend at the same time.

The step-by-step procedure for determining the degree of "match" is as follows:
(For a more detailed analysis, see Hill, 1973b)

Step 1. Determine which "style" or "mode" will be used as the referent in the "matching" process. This decision is not an arbitrary one. In this example, it was reasoned that the contents and mode of understanding of the story, *Santiago*, should be selected as the referent because of its wide appeal, high interest level, and specialized usefulness.

Step 2. Essentially the system of matching suggested here is one of assigning a value of 3, 2, 1, or 0 to each element in the "style" of the individual being matched with the reference "style." The *referent style* is scored* by assigning the value of 3, *only*, to each of its elements, *except that of L*, the "appraisal modality of inference," which, when it occurs in the "referent," or in the "style" being matched with the referent, should be assigned the value 9. To illustrate this step, suppose the "mode of understanding," or the referent "style" of the English version of the story is determined to be:

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*A *score* is defined to be a value assigned to an act or quality. Assigning values to the elements of "style," then, is an act of scoring that style. (Hill, 1973b, p. 2)

$$\overset{\textit{Symbols and their Meanings}}{\left\{\begin{array}{ll} 5\ldots\ldots\ldots\ldots3 & 5\ldots\ldots\ldots\ldots3 \\ T(AL)_e\ldots\ldots3 & T(VL)_e\ \ldots3 \\ Q(CEM)\ldots3 & \\ Q(CET)\ \ldots3 & \end{array}\right\}} \times \overset{\textit{Cultural Determinants}}{\left\{\begin{array}{l} I\ \ldots\ldots\ldots3 \\ A^t\ldots\ldots3 \\ F^t\ \ldots\ldots3 \end{array}\right\}} \times \overset{\textit{Modalities of Inference}}{\left\{\begin{array}{l} M_e\ \ldots3 \\ R_e\ \ldots3 \end{array}\right\}} = g$$

"Referent Style" of mode of understanding of English version of *Santiago*

Reading Level (ENGLISH): 5.1 3

Potentially Compatible Cognitive Style Elements To Be Matched	*Percentile Range*	*Justification for Score*
$T(AL)_e$—ability to find meaning through hearing spoken English words and sentences.	60-69	Oral version of story is assumed to be similar to printed version.
$T(VL)_e$—ability to find meaning through reading English written materials.	60-69	Application of *Fry Readability Scale* (1976) estimates English version of *Santiago*, in terms of readability, at the 5th grade level. This score is thought of in terms of average reading-grade scores on a test of reading comprehension.
Q(CEM)— sensitivity to how others feel	70-79	This attribute is viewed as essential to secure maximum understanding and appreciation of content of story since it focuses on youngsters, their behaviors, values, and attitudes.
Q(CET)—commitment to a set of values, a group of principles, obligations, and/or duties.	70-79	Task of reading requires a firm commitment on part of student to read story in its entirety.
I—individual uses one's own interpretation as an influence on meanings of symbols.	70-79	Behavior setting of classroom instruction normally requires student given the task of reading a story to perform such an activity by oneself; however, variations are evident within these settings, especially when small peer groups or teacher directed activity is employed.

Potentially Cognitive Style Elements To Be Matched	*Percentile Range*	*Justification for Score*
A′—one's peer group or associates exercise a major influence on meanings of symbols.	40-49	See statement for I.
F′—influence of teacher or teacher assistant as surrogate family member.	30-39	See statement for I.
M—(magnitude)— a form of categorical reasoning that utilizes norms or categorical classification as the basis for accepting or rejecting an advanced hypothesis.	60-69	Content analysis of story at sentence level resulted in frequent use (48%) of this type of modality of inference. Appendix B gives results for one page from story.
D—(difference)— a tendency to reason in terms of one-to-one contrasts or comparisons of selected characteristics or measurements.	10-19	Content analysis of story revealed few contrasts being employed throughout the story at the sentence level.
R—(relationship)— the ability to synthesize a number of dimensions or incidents into a unified meaning, or through analysis of a situation to discover its component parts.	50-59	Content analysis of story at the sentence level resulted in frequent number of lengthy sentences exhibiting a relationship modality (46%).

The nine elements selected as constituting the "mode of understanding" required by the story, *Santiago*, are shown with the percentile ranges that indicate the major or minor orientation of each element, respectively. A brief justification for scoring each element at a certain percentile range accompanies the description of each potentially compatible cognitive style element. These scores represent estimates at best, and are not to be interpreted as precise, exact values. It should be noted that each of the respective levels of educational development, 5 for $T(AL)_e$ and for $T(VL)_e$, along with reading level—5.1, is assigned a value of "3" as well as each of the other elements in the "referent style."

Step 3. Assign a value of 3, 2, 1, or 0 to each "element" of the "style" map of an individual's cognitive style map profile. Hill (1973b) suggests specific criteria for determining the number of points for each element. These rules of assignment are:

I. Assign a value of "3" to *Level of Educational Development*, i.e., the values above $T(AL)_e$ and $(T(VL)_e$, respectively, provided it is: (a) one level below (b) the same, or (c) higher than its counterpart "level" in the referent style.

II. Apply Rule I to *Reading Level*.

III. If the *Level of Educational Development* to be scored is: (a) two levels below, or (b) three levels below its counterpart level in the referent style, then assign a value of "2" to this element.

IV. If Rule I does not apply to *Reading Level*, then apply Rule III to it.

V. Assign a value of "1" to *Level of Educational Development* if it is: (a) four levels below, or (b) five levels below its counterpart in the referent style.

VI. If Rule I and Rule III do not apply to *Reading Level*, then apply Rule V.

VII. If the *Level of Educational Development* to be scored is more than five levels below its counterpart in the referent style, then assign a value of "0" to it.

VIII. If the *Reading Level* to be scored is more than five levels below its counterpart in the referent style, then assign a value of "0" to it.

IX. With the exception of the elements of: Level of Education Development, Reading Level, and the Appraisal (L) Modality of Inference, if the element to be scored shows the *same percentile range* as its counterpart element in the referent style, then assign a value of "3" to it. If the condition covered by this rule holds for the "Appraisal (L)" element to be scored, then assign a value of "9" to it.

X. If the orientation of the element, i.e., a "major," or a "minor," but not a "negligible," to be scored is the *same* as its counterpart element in the referent style, but its percentile range is *not* the same as its counterpart element, then assign a value of "2" to it. If this condition holds for the "Appraisal (L)" element to be scored, then assign a value of "6" to it.

XI. If the orientation of the element, i.e., a "major," or a "minor," but not a "negligible," to be scored is *different* from its counterpart element in the referent style, then assign a value of "1" to it. Since minor and negligible orientations in the "Appraisal (L)" element are not shown in the cognitive style map, this rule does not pertain to it. Moreover, if an element has a negligible orientation, it is not shown in the map and therefore this rule would not apply to it as well.

XII. Except for the "Appraisal (L)" element, if the element to be scored does not have a counterpart element in the referent style, then assign a value of "0" to it. In the case of the "Appraisal (L)" element, if its counterpart "L" does *not* occur in the referent style, but a "double-eigen"* involving the other "modalities" does occur, then assign a value of "6" to it. If the counterpart "L" does not occur in the referent style, but a "single-eigen" condition exists, then assign a value of "3" to it.

To illustrate how these point values are assigned, those elements found in the map profile being matched to the referent map, the following example is offered. This student of Puerto Rican background was designated as student number 31 and initially "mapped" during April, 1973 as part of the author's exploratory study (Baecher, 1973, p. 188).

Cognitive Style Map Profile of Bilingual Student No. 19

Present Grade: *4* Sex: *F* Age: *12.4* *Ethnic Origin: PR* Months in Pontiac, MI. *56*

Symbols and Their Meanings *Cultural Determinants* *Modalities of Inference*

$$\left\{\begin{array}{ll} 4 \ldots\ldots\ldots 3 & 3 \ldots\ldots\ldots 2 \\ T'(AL)_e \ldots 1 & T'(VL)_e \ldots 1 \\ Q'(CEM)_e\ .1 & \\ & \\ Q'(CET)_e\ ..1 & \end{array}\right\} \text{x} \left\{\begin{array}{l} I_e \ldots .2 \\ F'_e \ldots 3 \end{array}\right\} \text{x} \left\{\begin{array}{l} D_e \ldots 0 \\ \ \end{array}\right\} = g$$

of bilingual individual (B)

**RDLV: (English) 3.3 . . . 3

Cognitive Style Element	*Percentile Range*	*Justification for Score*
$T(AL)_e$	26-30	Adapted English comprehension test resulted in this score at the 3rd grade level.
$T(VL)_e$	20-29	Vocabulary and language usage subtests of *Iowa Tests of Basic Skills* resulted in this range at the 3rd grade level.

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*A "double-eigen" means two cognitive style elements with similar magnitude and direction.

**Estimated grade-equivalent score derived from reading subtest of *Iowa-Tests of Basic Skills*. This score is included in the cognitive style map profile because it continues to be used by teachers and publishers. However, caution must be exercised in its interpretation; in particular, whether it was derived from actual data, interpolation, or extrapolation.

$Q(CEM)_e$	26-30	This score was derived through a self-report inventory that yielded information pertaining to selected cognitive style elements of individual B. Principles of "major," "minor" designations were followed.
$Q(CET)_e$	26-30	See Statement For Q(CEM)
I_e	50-59	See Statement For Q(CEM)
F_e	40-49	See Statement For Q(CEM)
D_e	50-59	See Statement For Q(CEM)

Since the level of Educational Development for the $T(VL)_e$ element in the referent style is (5), while in B's map the level for $T(VL)_e$ element is (3), Rule III applies and the value of "2" is assigned to that level. Similarly, Rule I applies in assigning the value of "3" to the level of $T(AL)_e$ in B's map since it is one level lower than the referent element $T(AL)_e$. Since Reading Level 3 is defined by levels, from 2.5 through 3.49, respectively, the level 3.3 shown in B's map is defined to be at level 3. In this context, the student's reading level is lower than the reading level in the "referent" style (5.1); therefore, Rule II (which applies Rule I to Reading Level) is applicable, and a value of "3" is assigned to the Reading Level of 3.3.

Since the element theoretical visual linguistic is a minor orientation in B's map, $T'(VL)_e$, Rule XI applies, and a value of "1" is assigned to that element in B's map. In the same way, since $T'(AL)_e$ in B's map is a minor orientation, while in the referent the $T(AL)_e$ element is a major, Rule XI applies and "1" is assigned to that element in B's map.

Following the same rules with regard to the other cognitive style elements, Table 1 shows the element, the rule, and the corresponding value assigned to that element in B's map profile.

TABLE 1

Assigned Values to Selected Cognitive Style Elements and Corresponding Rules in Matching Techniques for B's Map.

Element	Rule	Value
$Q(CEM)_e$	XI	1
$Q(CET)_e$	XI	1
I_e	X	2
F_e	IX	3
D_e	XII	0

Step 4. Once the elements in the map being matched with the referent are scored, the total number of points associated with *each* of the following sets of elements, *in both the referent style and in the map being matched to it*, must be ascertained: (a) Levels of Educational Development and Reading Level, (b) the combinations of elements in the set of Symbols and their Meanings, (c) the

combination in the set of Cultural Determinants, and (d) the combination in the set of Modalities of Inference. To illustrate this procedure for:

(a) Levels of Educational Development and Reading Level *in the referent style*, the total points would be:
T(AL)$_d$(5)—3; T(VL)$_d$(5)—3; and RDLVL(5.1)—3; 3+3+3=9 points. While in B's map, the total number of points associated with these levels would be: T(AL)$_d$(4)—3; T(VL)$_d$(3)—2; and RDLVL(3.3)—3; or 3+2+3=8 points.

(b) Since all the elements in the set Symbols and their Meanings are binomial combinations of the form: (T—Q), or (T—Q'), or (Q—T'), or (T'—Q'), where the symbol (') refers to a minor orientation, the points for the theoretical symbol (T) involved in the combination are added to those for the qualitative symbol (Q) in that "binomial," unless the value assigned to either the theoretical or the qualitative is "0." The values of the binomial combinations are then totalled for each element, and these values, then, are added together to find the total number of points associated with the set Symbols and their Meanings. For example, *in the referent style*, for the T(AL)$_e$ element, each of the two binomial combinations: (T(AL)$_e$—Q(CEM)$_e$), (T(AL)$_e$—Q(CET)$_e$) equal: 3+3=6 points. Since there are two of these combinations and each one yields 6 points, the *total* for T(AL)$_e$ becomes, 2x6 points = 12 points. In a similar manner, the T(VL)$_e$ element yields 12 points. Therefore, the total number of points for the set Symbols and their Meanings, *in the referent style*, is: 8 points, (T'(AL)$_e$—Q'(CEM)$_e$), (T'(AL)$_e$—Q'(CET)$_e$), (T'(VL)$_e$—Q'(CET)$_e$), (T'(VL)$_e$—Q'(CEM)$_e$), and (T'VL)$_e$—Q'(CET)$_e$).

(c) The total number of points yielded by the (I) element in the set Cultural Determinants of the *referent style* is: I=3 points, (I—F') = 3+3=6 points, (I—A') = 3+3=6 points, or 3+6+6=15 points. The total number of points yielded by the eigen value array in the Cultural Determinants set of the student's map is: I=2 points, (I–F') = 2+3=5 points, or 2+5=7 points.

(d) In the third set, Modalities of Inference, the total number of points yielded by the (M) element and the (R) element, in the *referent style*, is: M=3 points, R=3 points, or 3+3=6 points. The (D) element in B's map yields: D=0 points.

Step 5. With the total number of points determined for: (a) the "Levels," (b) "Symbols and their Meanings," (c) "Cultural Determinants," and (d) the "Modalities," for the referent style, and for individual B's map, the percent of "agreement," or the "match" between each set can be derived. The values of these percent indices are calculated by dividing the total number of points associated with a given set in the bilingual student's map by the total number of points associated with the counterpart of that set found in the referent style. These calculations illustrate this step:

(a) *"Levels"*—Percent of Agreement =

$$\frac{\text{Total Points for ``Levels'' in Bilingual Map}}{\text{Total Points for ``Levels'' in Referent}} = \frac{8}{9} = .888$$

(b) *"Symbols"*—Percent of Agreement =

$$\frac{\text{Total Points for ``Symbols'' in Bilingual Map}}{\text{Total Points for ``Symbols'' in Referent}} = \frac{8}{24} = .333$$

(c) "Determinants"—Percent of Agreement =

$$\frac{\text{Total Points for ``Determinants'' Set Bilingual Map}}{\text{Total Points for ``Determinants'' in Referent}} = \frac{7}{15} = .46$$

(d) "Modalities—Percent of Agreement =

$$\frac{\text{Total Points for ``Modalities'' Set in Bilingual Map}}{\text{Total Points for ``Modalities'' Set in Referent}} = \frac{0}{6} = 0$$

Step 6. To determine the general percent of agreement, or degree of match, between the referent style, of the medium *Santiago*, and individual B's style in this example, the average or mean of the percents of agreement found in Step 5 is calculated:

$$\text{Degree of Match} = \frac{.888 + .333 + .466 + 0}{4} = \frac{1.687}{4} = .421$$

Note the one quarter "weighting" given to each set of information in the total "match."

Step 7. Applying Principle I, II, or III associated with the process of cognitive mapping (pp.15-16), determine the "orientation," i.e., a "major," "minor," or a "negligible," of the degree of match. For this example, with the value of the match being: .421, Principle II would be applied and the "match" would be classified as: "a minor." It should be pointed out that a 42.1 percent match indicates one of low degree and any assignments similar to the one analyzed in this paper and based upon this degree of match will require frequent monitoring and a strategy of augmentation conducive to success.

These seven steps, then, constitute the technique of matching between the educational cognitive style of individual bilingual students and the mode of understanding assumed in bilingual education.

To prevent this paper from becoming too lengthy and exceeding its major purpose, a brief comment must be made about the bilingual proficiency of this same student in his native language, Spanish, and the degree of match between the Spanish mode of *Santiago* and the bilingual's cognitive style. Within this context, application of these same seven steps of matching yielded the following match (See Appendix C for both maps):

$$\text{Degree of Match}—\frac{1.0 + .166 + .466 + 1.11}{4} = \frac{2.742}{4} = .685$$

Application of Principle I of the process of cognitive mapping would classify this as a "major" match between the Spanish version of *Santiago* and the student's cognitive style map profile, thereby demonstrating a "stronger" match in the case of this student with bilingual instruction that employs the student's native language. Nevertheless, caution and more empirical research are necessary to verify this conclusion.

Following these procedures and steps, bilingual practitioners and educational researchers involved in the study and advancement of bilingual instruction can begin to match the educational cognitive styles of bilingual learners and the salient features of the bilingual classroom with the modes of understanding required by various educational tasks. Although the illustration of this "matching" technique dealt with one bilingual individual's cognitive style and a famous work of Hispanic children's literature, other "matching" opportunities might include: teacher's cognitive style and bilingual pupil's cognitive style; modes of understanding required by education tasks such as mathematics, language arts, mastery learning, measurement, assessment, etc., and the individual's cognitive style; administrative style of an individual and the role expectancy of the administrative position he/she holds; and a variety of other matches involving teaching style and "collective" cognitive styles.

Moreover, since the educational cognitive style framework integrates the relative language proficiency of an individual in listening and reading comprehension in English and the individual's native language, respectively, *together* with other critical aspects that relate to cultural and reasoning patterns, e.g., sensitivity to the feelings of others and reasoning by means of contrasts, the technique of matching promises greater accuracy to practitioners and program designers responsible for developing varied bilingual programs for heterogeneously linguistic students.

Support for this assertion can be found in the recent recommendation of Burt and Dulay (1980, p. 20) who make "an appeal for greater variety in designing bilingual programs, less legal rigidity in mandating home language instruction, better matching of program features to student characteristics, the inclusion of parental input, and serious consideration of implementation factors when planning programs." Finally, empirical investigations conducted by Bartman (1974), Brodbeck (1974), Crookes (1977), DeNike and Strother (1976), Hodges (1977), Molina (1976), and Perry (1975) have confirmed the feasibility and advantages associated with this technique and its educational cognitive style framework. Insofar as this suggested technique of matching as formulated by Hill has been shown to be applicable within the context of bilingual education, a number of useful implications can be drawn for the design and adaptation of bilingual programs.

Implications of Educational Cognitive Style Matching

Two related consequences of the educational cognitive style framework and the suggested matching technique can be derived. One addresses the general forms of matching that might be investigated in designing more effective bilingual programs. The second implementation pertains to the process of "augmentation," i.e., increasing the quantity and quality of one's individual educational cognitive style, whereby cognitive style elements are viewed as alterable.

Speculating on possible strategies for matching within the context of aptitude treatment interactions (ATI), Cronbach and Snow (1977, pp. 169-171) outline three forms of matching: (1) "capitalization of strengths," (2) "compensation," and (3) "remediation." Briefly, a capitalization of strengths strategy capitalizes on what the learner is already capable of doing, builds on the individual's strengths and assets, and tailors instruction to the learner's general aptitudes. For example, students with high ability in deriving meaning from visual materials such as pictures, graphs, charts, etc. will perform better when instruction purposefully uses these materials. A compensation form of match refers to the kind of approach that does for the learner what he can't do for himself, e.g., a poor reader can listen to material if it is put on tape, the assumption being that the mode of presentation will compensate for the learner's deficiency in reading.

In contrast, remediation means overcoming some deficiency in learning and training, which leads to mastery of necessary specific objectives, instead of bypassing through a compensatory strategy. For instance, the learning of a poor reader is improved by training in a set of sequential reading skills. These three forms of matching, then, on an individual or collective basis, can provide some reference points in the promotion of learning.

With the understanding that one's educational cognitive style is expressed as a Cartesian product ($g = s \times e \times h$) forming a dynamic profile(s) over three spaces related to symbols and their meanings, cultural influences, and modalities of inference, respectively, one can combine the three forms of matching with the percent degree of match illustrated in the previous section. A degree of match, for example, falling in the range of 70%—99%, designated as a high "major" match, might indicate the usefulness of an intervention mode that capitalized on an individual's strengths and preferences. A low "major" match (50%—69% range) might call for a combination of compensation and capitalization of strengths approaches. A compensation form might be fully exploited in the case of a "minor" match (26%—49% range). Finally, a combined remediation and capitalization of strengths model could be explored in the event of a "negligible" match (1%—25% range). The exact combinations of forms and degrees of match must await further research, but, at least a beginning towards this goal has been formulated.

Discussion of the most appropriate form(s) of matching and the percent of congruence between a "referent" style and one's educational cognitive style raises the issue of the process of instruction in the case of "negligible" and "minor" matches. What is the next step in the case of a 20 percent negligible match between a referent style and individual cognitive style? What can be done with a 42 percent or "minor" match calculated for the bilingual student and the form of bilingual instruction requiring the reading of Hispanic literature? Useful questions of this sort, implying practical and creative intervention strategies, introduce the process of "augmentation" of cognitive styles. Augmentation assumes that cognitive style elements can be modified; they are not unchangeable and static features such as age and socioeconomic status. To engage in the process of augmenting one's cognitive style is to ascertain and construct the best match in the intersection of student-teacher-task by coordinating the diverse and unique resources that are available in the individual's search for meaning.

Consider the cognitive style profile of individual B:

$$g = \left\{ \begin{matrix} T^{\prime 4}(AL)_e & T^{\prime 4}(VL)_e \\ T^{\prime 4}(AL)_s & T^{\prime 4}(VL)_s \\ Q^{\prime}(CEM) & \\ Q^{\prime}(CET) & \end{matrix} \right\} \times \left\{ \begin{matrix} I \\ F^{\prime} \end{matrix} \right\} \times \left\{ \begin{matrix} D \end{matrix} \right\}$$

where this individual is equally proficient in listening, T(AL), and reading, T(VL), in both English and Spanish, respectively; can stick with an assignment and identify with the feelings of others in a moderate manner, Q'(CET) and Q'(CEM); work independently, I, and contrast information, D.

In comparison, the conditions of the educational task associated with the reading of the book, *Santiago*, are:

$$g = \left\{ \begin{array}{ll} T^5(AL)_e & T^5(VL)_e \\ T^5(AL)_s & T^5(VL)_s \\ Q(CEM) & \\ Q(CET) & \end{array} \right\} \times \left\{ \begin{array}{c} I \\ A' \\ F' \end{array} \right\} \times \left\{ \begin{array}{c} M \\ \\ R \end{array} \right\}$$

where symbols in listening and reading in English and Spanish are at the fifth grade level of educational development; a high degree of sticking with the assignments and sensitivity to others is expected; independent work involving categorical and relationship patterns of reasoning is called for.

Analysis and calculation of the degree of match resulted in a 42 percent match, thereby necessitating some sort of intervention strategy on the part of the individuals responsible for enhancing this individual's chances of success in educational tasks. Among the numerous and possible ways in which the match can be augmented or increased, these are suggested:

1. Work in tasks that require categorical (M) and relationship (R) thinking, e.g., programmed materials, short reading selections, workbook exercises. These activities will have as their aim the addition of these cognitive style elements to individual B's map.
2. Have the student work on vocabulary and reading comprehension exercises in English so as to increase his capabilities in acquiring meaning from printed materials.
3. The minor elements of qualitative code empathetic, Q'(CEM), and qualitative code ethic, Q'(CET), can be augmented through discussions of the importance and usefulness of reading and the content of the story. Sociodramas might also be beneficial.
4. Another approach might entail adapting the organization of the story in these ways:
   a) Focus upon the differences between Santiago and Ernie, especially the ways in which Santiago tried to persuade Ernie about his pet, Selina.
   b) Divide the story into short segments or natural episodes, employing less difficult vocabulary and questioning that attaches meaning to the contrasts within the story.

These, then, are only a few of the ways in which the match between the individual's cognitive style map profile and mode of understanding required by the educational task can be augmented. Researchers, curriculum specialists and practitioners can generate many more intervention strategies.

This paper has identified a dynamic conceptual framework, educational cognitive style, whose common language and principles were employed in a suggested technique for matching the educational cognitive styles of bilingual students and modes of understanding required by bilingual education. The procedures and steps of this matching technique were illustrated, and the implications of this process were briefly described.

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APPENDIX A

DIMENSIONS OF THE COGNITIVE STYLE MAP

I. Symbols and Their Meanings

Two types of symbols, theoretical and qualitative, are created and used by individuals to acquire knowledge and derive meaning from their environments and personal experiences. Theoretical symbols present to the awareness of the individual something different from that which the symbols are. Words and numbers are examples of theoretical symbols. Qualitative symbols present and then represent to the individual that which the symbol is. Feelings, commitments, and values are examples of the meanings conveyed by qualitative symbols. Theoretical symbols include:

T(VL)—Theoretical Visual Linguistics—ability to find meaning in written words

T(AL)—Theoretical Auditory Linguistics—ability to acquire meaning through hearing spoken words

T(VQ)—Theoretical Visual Quantitative—ability to acquire meaning in terms of numerical symbols, relationships, and measurements that are written

T(AQ)—Theoretical Auditory Quantitative—ability to acquire meaning in terms of numerical symbols, relationships, and measurements that are spoken

The four qualitative symbols associated with sensory stimuli are:

Q(A)—Qualitative Auditory—ability to perceive meaning through the sense of hearing

Q(O)—Qualitative Olfactory—ability to perceive meaning through the sense of smell

Q(T)—Qualitative Tactile—ability to perceive meaning through the sense of touch, temperature, and pain

Q(V)—Qualitative Visual—ability to perceive meaning through sight

The qualitative symbols that are programmatic in nature are:

Q(PF)—Qualitative Proprioceptive (Fine)—ability to synthesize a number of symbolic mediations into a performance demanding monitoring of a complex task involving small, or fine, musculature (e.g., playing a musical instrument, typewriting)

Q(PG)—Qualitative Proprioceptive (Gross)—ability to synthesize a number of symbolic mediations into a performance demanding monitoring of a complex task involving a large, or gross, musculature (e.g., throwing a baseball, skiing)

Q(PKF)—Qualitative Proprioceptive Kinematics (Fine)—ability to synthesize a number of symbolic mediations into a performance demanding the use of fine musculature while monitoring a complex physical activity involving motion

Q(PKG)—Qualitative Proprioceptive Kinematics (Gross)—ability to synthesize a number of symbolic mediations into a performance demanding the use of gross musculature while monitoring a complex physical activity involving motion

Q(PTF)—Qualitative Proprioceptive Temporal (Fine)—ability to synthesize a number of symbolic mediations into a performance demanding the use of fine musculature while monitoring a complex physical activity involving timing

Q(PTG)—Qualitative Proprioceptive Temporal (Gross)—ability to synthesize a number of symbolic mediations into a performance demanding the use of gross musculature while monitoring a complex physical activity involving timing

The remaining are defined as:

Q(CEM)—Qualitative Code Empathetic—sensitivity to the feelings of others

Q(CES)—Qualitative Code Esthetic—ability to enjoy the beauty of an object or an idea

Q(CET)—Qualitative Code Ethic—commitment to a set of values, a group of principles, obligations and/or duties

Q(CH)—Qualitative Code Histrionic—ability to exhibit a deliberate behavior, or play a role to produce some particular effect on other persons

Q(CK)—Qualitative Code Kinesics—ability to understand, and to communicate by, nonlinguistic functions such as facial expressions and motions of the body (e.g., smiles and gestures)

Q(CKH)—Qualitative Code Kinesthetic—ability to perform motor skills, or effect muscular coordination according to a recommended, or acceptable, form (e.g., bowling according to form, or golfing)

Q(CP)—Qualitative Code Proxemics—ability to judge the physical and social distance that the other person would permit, between oneself and that other person

Q(CS)—Qualitative Code Synnoetics—personal knowledge of oneself

Q(CT)—Qualitative Code Transactional—ability to maintain a positive communicative interaction which significantly influences the goals of the persons involved in that interaction (e.g., salesmanship)

Q(CTM)—Qualitative Code Temporal—ability to respond to or behave according to time expectations imposed on an activity by members in the role-set associated with that activity

II. Cultural Determinants

There are three cultural determinants of the meaning of symbols:

I—Individuality—uses one's own interpretation as an influence on meanings of symbols

A—Associates—symbolic meanings are influenced by one's peer group

F—Family—influence of members of the family, or a few close personal friends, on the meanings of symbols

III. Modalities of Inference

The third set of cognitive style data includes elements that indicate the individual's modality of inference, i.e., the form of inference used:

M—Magnitude—a form of categorical reasoning that utilizes norms or categorical classifications as the basis for accepting or rejecting an advanced hypothesis

D—Difference—a tendency to reason in terms of one-to-one contrasts or comparisons of selected characteristics of measurements

R—Relationship—the ability to synthesize a number of dimensions or incidents into a unified meaning, or through analysis of a situation to discover its component parts

L—Appraisal—the modality of inference employed by an individual who uses all three of the modalities noted above (M, D, and R), giving equal weight to each in the reasoning process

APPENDIX B

(ENGLISH VERSION OF *SANTIAGO*)

Total number of sentences in story: 275

(a) 133 sentences categorized as Magnitude modality of inference (48%)
(b) 127 sentences categorized as Relationship modality of inference (46%)
(c) 17 sentences categorized as Difference modality of inference (6%)

"That's enough, Ernie," said Miss Taylor.(M)

"Santiago, you are sure you saw this hen?"(R)

"Yes, Miss Taylor."(M)

"Good.(M) Then we can settle this matter.(M) We will go and look at this hen."(R)

"Now, now?" asked the children.(M)

"Now we go back to work.(M) On our way to the river, we will stop by the parking lot."(R)

Work resumed.(M) Lucille and María went back to their finger painting.(R) Hector and Ernie began fixing the cardboard moat for their castle.(R) Shirley and Clarice started sorting the seashells that were to be pasted on a sewing box.(R) Santiago and Joseph began to cut table mats.(R)

Miss Taylor gathered the raffia work and set it on a table close to her desk.(R) She smiled to herself as she thought that for once the children were all working diligently.(R) That Santiago, she thought, he seems to be in two places at once.(R) He lives in New York,(M) but his mind(D) is full of his adventures with that pet hen back in Puerto Rico. Many times he has told the children about her.(R) And all believe him, that is, all except Ernie.(D) You have to show Ernie.(M)

Taken from *Santiago* by Pura Belpre, N.Y.: Frederick Warne and Co., Inc., 1969. (page 12)

(SPANISH VERSION OF *SANTIAGO*)

Total number of sentences in story: 276
(a) 147 sentences categorized as Magnitude modality of inference (53%)
(b) 117 sentences categorized as Relationship modality of inference (42%)
(c) 12 sentences categorized as Difference modality of inference (5%)

"Basta ya, Erni," dijo la señorita Taylor.(M)

"Santiago, ¿estás seguro que viste esta gallina?"(R)

"Sí, señorita Taylor."(M)

"Bueno.(M) Entonces podemos resolver este asunto.(M) Iremos a ver esta gallina."(M)

"¿Ahora, ahora?" preguntaron los niños.(M)

"Ahora volvemos a trabajar.(M) En el camino hacia el río, nos detendremos en el sitio de estacionamiento."(R)

El trabajo prosiguió.(M) Lucila y María volvieron a sus pinturas digitales.(R) Hector y Erni empezaron a arreglar los cartones para el foso de su castillo.(R) Shirley y Clarisa empezaron a escoger los caracoles que iban a pegar en el costurero.(R) Santiago y José empezaron a cortar esteras de mesa.(R)

La señorita Taylor recogió el trabajo de rafia y lo puso sobre la mesa junto a su escritorio.(R) Sonrió para sí mientras pensaba que por primera vez todos los niños estaban trabajando diligentemente.(R) Ese Santiago, pensó, parece estar en dos lugares al mismo tiempo.(R) Vive en Nueva York,(M) pero su mente está llena de las aventuras con esa gallina favorita en Puerto Rico.(D) Muchas veces le ha contado a los niños acerca de ella.(R) Y todos le creen,(M) eso es, todos, excepto(D) Erni. A Erni hay que demostrarle para que crea.(M)

Taken from *Santiago* by Pura Belpre, N.Y.: Frederick Warne and Co., Inc., 1969. (page 12)

APPENDIX C

Results of Matching Spanish version of *Santiago* (referent style) with bilingual student's style.

$$\begin{array}{ccccccc} \textit{Symbolic Orientation} & & \textit{Cultural Determinants} & & \textit{Modalities of of Inference} & & \\ \left(\begin{array}{ll} 5\text{—}3 & 5\text{—}3 \\ T(AL)_s\text{—}3 & T(VL)_s\text{—}3 \\ Q(CEM)\text{—}3 & \\ Q(CET)\text{—}3 & \end{array}\right) & \times & \left(\begin{array}{l} I\text{—}3 \\ A'\text{—}3 \\ F'\text{—}3 \end{array}\right) & \times & \left(\begin{array}{l} M\text{—}3 \\ R'\text{—}3 \end{array}\right) & & \begin{array}{l} g = \\ \text{``Referent} \\ \text{Style'' of} \\ \textit{Santiago} \end{array} \end{array}$$

RDLVL (Spanish): 5—3 (estimate based upon Fry graph adjusted for Spanish text; See Gilliam et al. 1980)

$$\left(\begin{array}{ccccc} \textit{Symbolic Orientations} & & \textit{Cultural Determinants} & & \textit{Modalities of Inference} \\ \left(\begin{array}{ll} 4\text{—}3 & 4\text{—}3 \\ T'(AL)_s\text{—}1 & T'(VL)_s\text{—}1 \\ Q'(CET)_s\text{—}1 & \end{array}\right) & \times & \left(\begin{array}{l} Is\text{—}2 \\ F'_s\text{—}3 \end{array}\right) & \times & \left(\begin{array}{ll} M_s\text{—}2 & D_s\text{—}0 \\ R'_s\text{—}3 & R'_s\text{—}3 = g \text{ of } B \end{array}\right) \end{array}\right)$$

RDLVL (Spanish): 3.6—3

Element	*Percentile Range*
$T(AL)_s$	60-69
$T(VL)_s$	60-69
Q(CEM)	70-79
Q(CET)	70-79
I	70-79
A'	40-49
F'	30-39
M	60-69
R'	40-49

Element	*Percentile Range*
$T(AL)_s$	25-30
$T(VL)_s$	60-69
$Q(CET)_s$	60-69
I_s	50-59
F_s	30-39
M_s	50-59
D_s	50-59
R_s	40-49

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THE CONSTRUCTION AND VALIDATION OF LISTENING AND READING COMPONENTS OF THE ENGLISH AS A SECOND LANGUAGE ASSESSMENT BATTERY

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In the area of bilingual education, a major concern is that of assessing the English-language proficiency of secondary bilingual students once they are identified as having limited-English proficiency under Title VII or according to the *Lau* categories (Office of Civil Rights: Task Force Findings, 1975) which categorize students as:

1. Monolingual speakers of a language other than English (speaks the language other than English exclusively).
2. Predominantly speaks a language other than English (speaks mostly the language other than English, but speaks some English).
3. Bilingual (speaks both a language other than English and English with equal ease).
4. Predominantly speaks English (speaks mostly English, but some language other than English).
5. Monolingual speaker of English (speaks English exclusively). (Office of Civil Rights: Task Force Findings, 1975, p. 2).

Diagnosis of language proficiency, essential in grouping secondary limited-English-speaking students for instruction in bilingual programs has been problematic for four reasons: (1) inconsistent identification of specific language proficiency skills for functioning in a unilingual and/or bilingual classroom (Cummins, 1979); (2) nonspecification of proven reliable and valid norm—and/or criterion—referenced tests that measure linguistic competencies of secondary bilingual students in the native language (L_1) and second language (L_2) (Silverman, Noa, Russell, 1977); (3) limited availability of criteria for grouping bilingual students for ESL and reading instruction; and (4) lack of evidence as to interrelationships between listening, speaking, reading and writing as these areas relate to secondary bilingual students.

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To address these pedagogical concerns, the intent of the research reported here was to construct and validate an effective, reliable criterion-referenced instrument, the English-as-a-Second-Language Assessment Battery (ESLAB), for assessing the receptive (listening and reading) and the expressive (speaking and writing) language areas of students learning English-as-a-Second-Language (ESL) in bilingual education programs. Validation of the ESLAB was divided into the review of the receptive and expressive language areas based on the facts that individuals acquire competence before performance and that the receptive area precedes the expressive area in the acquisition of language (Horowitz and Berkowitz, 1967; Chastain, 1976; Marshall and Glock, 1978).

This study focused on the construction and examination of the receptive area, which included the Aural Comprehension Test, the Structural Competency Test, and the Informal Reading Inventory. It established the reliability and validity of these test components and assessed their value as potential instruments for grouping bilingual students in ESL and reading classes. Additionally, results from the Oral Screening Test, the Oral Competency Test, the Dictation Exercise, and the Writing Sample were analyzed to note interrelationships between the receptive and expressive language areas.

NEED FOR LANGUAGE PROFICIENCY ASSESSMENT OF BILINGUAL STUDENTS

The current concern for language proficiency assessment of bilinguals has evolved from various interrelated issues: (1) the fact that non-English speakers have been haphazardly placed into programs for the mentally retarded based on instrumentation that has not been normed for this population, (2) resulting low achievement for these individuals placed in sink-or-swim situations through submersion into total English programs, and (3) compliance by educators with bilingual legislation emphasizing English language proficiency as a primary variable in bilingual programs.

The first issue has been substantiated by a longitudinal study (Mercer, 1971), which found that in one school 32 percent of the 81 percent Anglos; 45 percent of the 11 percent Mexican Americans; and 21 percent of the 8 percent Blacks were placed in classes for the mentally retarded based on results from standardized measures. The reason for this not uncommon situation is the inherent danger of cultural and linguistic bias in utilizing instrumentation that was not normed with the group making use of such tests (Condon, 1975; Morishima, Mizokawa, 1977).

The misuse of testing instruments and the placement of limited-English speakers leads to the second issue of concern, that of continual low achievement and high drop-out rates (Samora, 1968; Sanchez, 1971). High drop-out rates have been reported for Mexican Americans, Puerto Ricans (U.S. Civil Rights Documents, 1971-1976), and Native Americans (Social Indicators for Minorities and Women, 1978). Negative achievement rates also have been noted for other linguistic minority groups (Coleman, 1966; Task Force on Children Out of School, 1970; *Lau* vs. *Nichols*, 1974; National Assessment of Educational Progress, 1977). More recently the 1977 National Assessment has reported that the educational achievement of linguistic minority students is "constantly below the achievement of the total national age population (p. 5)."

In acknowledgement of these perplexing statistics, the government passed the Bilingual Education Act of 1968. The mandate of bilingual legislation is that instruction has to be in the minority students' native language (L_1) (Office of Education: "Bilingual Education: An Unmet Need", 1976) and that students' language needs in L_1 and English (L_2) must be met to prepare these students for participation in English curriculums (*Lau* vs. *Nichols*, 1974; Office of Civil Rights: Task Force Findings, 1975). The Educational

Amendments of 1978 stressed that students to be serviced in bilingual education programs are those ". . . who have difficulty speaking, reading, writing or understanding the English language . . ." (p. 70). Compliance with legislation on the part of educators leads to the third issue, the identification of language proficiency instruments designed for bilingual students. The problem is that although numerous formal and informal tests exist (Gutierrez and Rosenbach, 1975), they are seldom comprehensive or organically interrelated in design.

Theoretical Framework

Based on the crucial need for a uniform procedure in the assessment of English-language-proficiency skills of limited-English speakers, the English-as-a-Second-Language Assessment Battery (ESLAB) was developed. Cohen's model (1975) (Figure 1) was used as the theoretical base because it: (1) described the receptive (listening and reading) and the expressive (speaking and writing) language areas; (2) indicated the components comprising the language areas that require mastery of phonemes and graphemes, familiarity with vocabulary (lexicon), internalization of grammatical structures or rules of language usage (syntax), attaching meaning to referents (semantics), and applying sequences of linguistic components to the broader context of experience (pragmatics) (Oller and Kyle, 1978); (3) depicted the language domains or contexts within which language can be described; (4) indicated the language variety or the type of language (Fishman, 1972) that is used in diverse geographical locations or within the same speech community or communities; and (5) highlighted all of these elements as critical in L_1 and L_2 development.

Although Cohen (1975) presented one model of language, interrelationships of the four language areas (listening, speaking, reading, and writing) have been viewed and studied in various ways. Loban (1963), Ruddell (1965), Taylor (1969), Bradley (1970), Smith (1971), Ingram (1974), Goodman (1976), Ruddell (1976), Carline and Hoffman (1976) have noted that oral language (listening and speaking) precedes written language (reading and writing). In addition, the receptive language areas (listening and reading) were found to be parallel to the expressive language areas (speaking and writing) (Chastain, 1976; and Horowitz and Berkowitz, 1967).

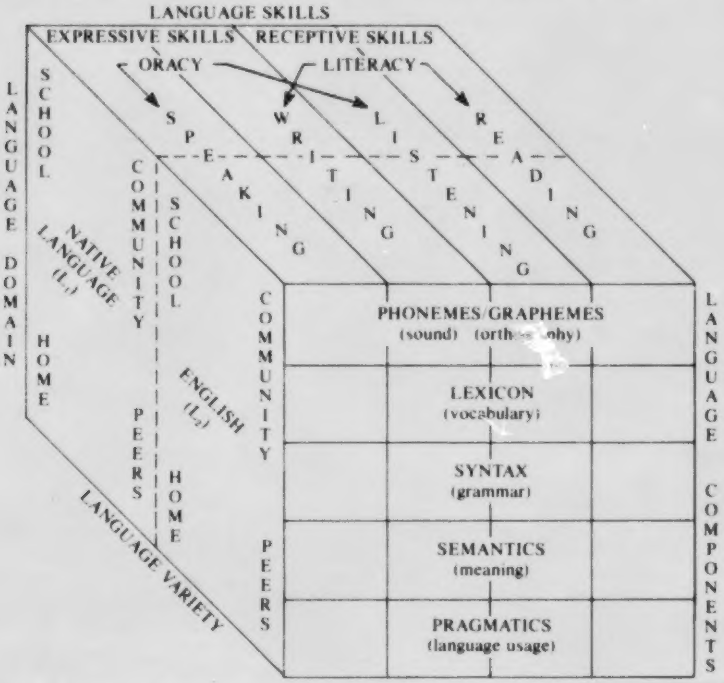
For the purpose of this study, listening and reading were examined in greatest detail. Many researchers (Devine, 1968; Carroll, 1970; Wilkinson and Stratta, 1970; Wilkinson, 1971; Murray, 1972; Massaro, 1977) are in accord that listening and reading correlate with each other. Yet experts, Goodman, (1976); Wilkinson and Stratta, (1970); Murray, (1972); Schallert, Kleiman and Rubin, (1977); and Stoltz and Portnoy, (1978), have indicated that, although related, listening and reading require different skills.

With the establishment of a theoretical framework, the most important considerations in assessing language are the areas to be assessed and the methods for assessing them. The notion of what is to be assessed can be addressed by reviewing the controversial areas of: language competence vs. performance; language proficiency vs. communicative competence; and language dominance vs. language proficiency.

Chomsky (1965) differentiated between an individual's internalized knowledge of vocabulary, the rules (grammar) for joining words together

FIGURE 1

LANGUAGE AREAS. ADAPTED FROM COHEN (1975).


LANGUAGE SKILLS
EXPRESSIVE SKILLS
RECEPTIVE SKILLS
ORACY
LITERACY
SPEAKING
WRITING
LISTENING
READING
LANGUAGE DOMAIN
SCHOOL
COMMUNITY
PEERS
HOME
NATIVE LANGUAGE (L1)
SCHOOL
COMMUNITY
PEERS
HOME
ENGLISH (L2)
LANGUAGE VARIETY
PHONEMES/GRAPHEMES
(sound) (orthography)
LEXICON
(vocabulary)
SYNTAX
(grammar)
SEMANTICS
(meaning)
PRAGMATICS
(language usage)
LANGUAGE COMPONENTS

that constituted competence and an individual's observable language output of his/her performance or production (McNeill, 1966; Wilkinson, 1971). Although in many instances testers examine competency through individual language performance, it should be noted that performance does not always reflect competence.

In the ESLAB, competency was tested before performance. Listening and reading (receptive language area) as indicators of competency preceded speaking and writing (expressive language area) as indicators of performance.

Communicative competence (Oller and Conrad, 1971) can be measured through the observation of an individual's actual use of oral language in a functional situation. Language proficiency is the evaluation of a person's degree of oracy (listening, speaking) and literacy (reading and writing) skills (MacNamara, 1969; Jones and Spolsky, 1975).

A distinction between language dominance and proficiency is that dominance (Dickson, 1975; Zirkel, 1976) refers to an individual's oral communicative competence (Office of Civil Rights: Task Force Findings, 1975) while language proficiency takes all the language skills into consideration. For the ESLAB, proficiency was the primary concern.

The issue of how language is to be assessed can be explained through existing philosophies (discrete point and integrative) and the possible instruments (norm and criterion-referenced) to be considered in language assessment. Traditionally, the discrete point approach, which assessed an individual's ability to manipulate the individual components of language, was utilized. More recently, however, integrative assessment, which allows for examination of a student's global language abilities in a holistic manner, has been employed (Oller, 1975; Shuy, 1978; Oller and Kyle, 1978). For the ESLAB, a combined approach of discrete-point and integrative philosophies was adopted.

Language proficiency can be measured through either norm-referenced or criterion-referenced tests. Norm-referenced tests tend to provide a global idea about student performance (Popham, James et. al., 1973), since the intent of these tests is to establish normative reference groups. Scoring criteria are not determined until all subjects have completed a given test and a mean has been calculated (Glaser and Nitko, 1971; Popham and Husek, 1971; Randall, 1972; Oakland, 1972; Smith, 1973; and Popham, James, et al., 1973).

On the contrary, criterion-referenced tests outline specific behavioral objectives and establish a priori scoring criteria in order to determine a student's mastery or non-mastery of content. The concern is to isolate the individual's strengths and weaknesses so that follow-up instructional objectives can be delineated (Jackson, 1970; Roudabush, 1971; Blatchford, 1971; Davis, 1971; Randall, 1972; Edmonston and Randall, 1972; Smith, 1973; and Popham, James, et al., 1973).

Variability is the essential validity issue between norm and criterion-referenced tests (Popham and Husek, 1971). Because the purpose of a norm-referenced test is to compare a group of individuals with an objective criteria, it is expected that subjects' performances would vary over a wide range. However, in the case of a criterion-referenced test, individuals are compared to a specific performance standard (Nitko, 1971; Popham and Husek, 1971). Therefore, it may be the case that the scores of a group of students taking a criterion-referenced test could fall within close range of each other. This would not indicate lack of validity on the part of the test but that most of the students had mastered given content and/or skills . For the purpose of this study, a criterion-referenced battery of tests was developed based on specific behavioral objectives.

The major consideration in the development of the ESLAB was to provide for the possible varying levels of L_1 and L_2 abilities among bilingual students; the fact that some students may or may not have world knowledge (Cummins, 1979); that others may or may not have aural/oral skills in L_1 and/or L_2; still others may or may not be literate in L_1 and/or L_2. To accommodate these levels, the administration of a native language test prior to the ESLAB is recommended since research studies (Orata, 1953; Vasquez and Barrera, 1953; Castro de la Fuente, 1961; Arnold, 1968; Burns, D. 1968; Modiano, 1968; Pryor, 1968; Hillerich and Thorn, 1969; Taylor, 1969; Wise, 1969; Burns, N., 1970; Ehrlich, 1971; Inclan, 1971; John, Horner and Berney, 1971; Dubé and Hebert, 1975; Rosier and Farella, 1976; USAID, 1967) were in agreement that, in most cases, students possessing competence of literacy skill in L_1 were capable of transferring skills to L_2. Then the ESLAB is administered to examine English (L_2) skills through aural/oral, reading, and writing tests. Once results are attained students are grouped into five entry level categories (Beginner I and II; Intermediate I and II; and Advanced) for instruction.

ANALYSES OF DATA

The validation procedure for the receptive language area of the ESLAB included item analysis, establishment of reliability; and the confirmation of test validity.

Item Analysis

Researchers (Thorndike, 1967; Thorndike and Hagen, 1969; Popham and Husek, 1971; Litchman, 1973; and Sax, 1974) questioned conventional item analysis for criterion-referenced tests. Yet they were not clear as to the appropriate procedure for criterion-referenced items (Litchman, 1973). For the ESLAB, item analysis was based upon the test developer's judgement of item relevancy and empirical data results.

The data results for the receptive language area were as follows: Aural Comprehension Test, p (percentile, difficulty index) values ranging from 27.1% to 89.9% and RPB (point-biserial correlation, discrimination index) values of .08 to .67; the Structural Competency Test, p values of 1.7% to 64.4% and RPB values of −.01 to .47; and the Informal Reading Inventory, (IRI) p values between 0.0% and 69.5% and RPB scores of 0.0 to .70. The trend indicated that items were either simplistic or extremely difficult as in the case of the latter two tests. However, when students' overall performance was examined there was an indication of mastery of oral/aural skills but not literacy skills.

Reliability

Reliability was attained statistically based on Hoyt and Cronbach (Nelson, 1976) alpha values of internal consistency. The calculated estimates of reliability were: Aural Comprehension Test, Hoyt Estimate, .81; Structural Competency Test, Hoyt value, .37; and IRI, Hoyt value, .83. The values for the Aural Comprehension Test and the IRI were acceptable, in each case being over .70 (Thorndike and Hagen, 1969), but the estimate for the Structural Competency Test was extremely low. A possible reason for the low value is that the majority of students did not attempt the test. Yet the ones who did (in most cases the high achievers of the overall ESLAB) performed badly, thus creating disharmony to the internal consistency of the test. The low reliability of the Structural Competency Test, in turn, inflated the SEm of 4.25 for the receptive area. Total test statistics were also calculated. For the three tests the Hoyt value was .79, Cronbach's coefficient was .21 and the IRI Hoyt estimates for the individual stories ranged from .31 to .71, with an overall Hoyt of .83 and Cronbach's coefficient of .74.

Validity

Validity was of four types. The first, face validity, indicated that both examiners and examinees viewed the tests positively. In terms of the second type, content validity, language and reading experts analyzed the test items in terms of specified objectives. Based on their judgements, items were altered accordingly. The third, predictive validity, used Kendall's tau (Nie, et al., 1975) (Table 1) to correlate each test component's level results (Beginner I, Beginner II, Intermediate I, Intermediate II, and Advanced) with the four Teacher Estimates (T.E.) of how each student would perform on the ESLAB, and the students' ESL report card grades. The resulting indices indicated a positive significant relationship among the three variables. The fourth was concurrent validity used only for the IRI. A Pearson Coefficient indicated a high correlation between: the IRI and Cloze Test .7484 at $p<.01$; IRI and *Stanford Diagnostic Reading Test* (1976 Edition), .6203 at $p<.01$; Stanford and Cloze .6105 at $p<.05$; T.E. and Stanford .4248 at $p<.05$; T.E. and Cloze .3577. The three reading tests were related but the IRI and T.E. had a negative (−.4056) relation since teachers tended to underestimate students' levels.

From these results, it was concluded that the receptive area tests are valid measures of language proficiency.

TABLE 1

PREDICTIVE VALIDITY CORRELATIONS BETWEEN LEVEL PERFORMANCE ON THE RECEPTIVE LANGUAGE AREA TESTS, TEACHER ESTIMATES AND ESL GRADES

	Aural Comprehension Test (A.C.)	Structural Competency Test (S.C.)	Informal Reading Inventory (IRI)	English as a Second Language (ESL) Grade
Aural Comprehension				.37662**
Structural Competency				.25200**
Informal Reading Inventory				.37600**
Teacher I (A.C.)			.25899*	.41850**
Teacher I (S.C.)		.33405**	.25874*	
Teacher I (IRI)				.35967**
Teacher II (A.C.)		.35714*	.28360*	
Teacher II (S.C.)		.48658**	.32880**	.37693**
Teacher II (IRI)		.57050**	.34568**	.24301*
Teacher III (S.C.)		.32931**		.29860**
Teacher III (IRI)		.34397**		
Teacher IV (A.G.)		.65049**	.50581**	

Note. $n = 59$.
*$p < .05$.
** $p < .01$.

Interrelations of the Language Areas

The data also served to demonstrate interrelations among the language areas (Oller, 1975) or the contentions that: (1) within the receptive language area, listening and reading are related, (2) the language areas of listening, speaking, reading, and writing are interrelated, with the components of the receptive area having the same relationship as those of the expressive area, and the components of oral language having the same relationship as those of written language, and that (3) oracy skills precede literacy skills. To examine these relations, raw scores and level results (Beginner I, II; Intermediate I, II; Advanced) for the seven tests were plotted on Pearson Correlational Matrices.

Raw scores of the receptive area tests, indicated no relationship between the Aural Comprehension Test, the Structural Competency Test and IRI. However, each test had a high correlation, .6050, .3730 and .8090 at $p<.01$, respectively with the total test score. The explanation may be that these tests were related to the receptive language area but may, in fact, have been examining different skills.

Level results of the receptive area indicated a close relationship between listening and reading abilities with values of .4147 at $p<.01$ for the Aural Comprehension Test and the Structural Competency Test; .3534 at $p<.01$ for the Aural Comprehension Test and the IRI; and .5137 at $p<.01$ for the Structural Competency Test and the IRI.

Correlations for the raw score results of all the ESLAB tests were as follows: Oral Screening Test and Oral Competency Test .6337 at $p<.01$, Oral Screening and IRI −.2775 at $p<.01$, Dictation Exercise and Writing Sample .4157 at $p<.01$, and IRI and Writing Sample .4046 at $p<.01$. The two oral tests were related and may, in fact, have examined similar skills. The Oral Screening and IRI had a negative correlation since both examined different skills with the first treating oral language and the latter written language. The two writing tests appeared to be testing similar skills, and the Writing Sample was related to the IRI in that they both evaluated literacy skills.

The resulting relationships for the level results of the ESLAB were: Oral Competency Test and Aural Comprehension Test .3740 at $p<.01$; Oral Competency Test and Structural Competency Test .3350 at $p<.05$; Oral Competency Test and IRI .5057 at $p<.01$; Aural Comprehension and Structural Competency .4147 at $p<.01$; Aural Comprehension and Test and IRI .3534 at $p<.01$; Dictation Exercise and IRI .3276 at $p<.01$; Dictation Exercise and Writing Sample .2579 at $p<.05$; Structural Competency Test and IRI .5137 at $p<.01$; and IRI and Writing Sample .2340 at $p<.05$.

The resulting interrelationship of the Oral Competency and the Aural Comprehension Tests indicated that both measured listening skills. The Aural Comprehension and the Structural Competency Tests both examined similar grammatical structures. The Aural Comprehension Test and the IRI demonstrated a relationship because they are both components of the receptive area of language. The Dictation Exercise similar to Oller's (1975) findings seemed to be the one component to correlate with most of the other ESLAB components. The reason may be that the process of dictation involved listening and then writing, which would incorporate oral and written as well as receptive and expressive language areas. The significant relationship between the Structural Competency Test and the IRI was logical, in that both tests required reading skills. The relationship between the IRI and the Writing Sample indicated that both examined literacy skills. Overall, the components of the receptive and expressive language areas of the ESLAB seemed to be related.

Generally, results indicated a close relationship between listening and reading within the receptive language area. There was also a relationship between the oral language areas, listening and speaking, similar to Oller's (1975) findings. The reading and writing areas also seemed to be related.

Conclusions and Implications

The significance of this study is trifold: (1) information is provided as to the methodology for constructing and validating a criterion-referenced assessment battery; (2) the English-as-a-Second-Language Assessment Battery (ESLAB) has been prepared and pilot tested with secondary bilingual students, and (3) the data provided support the contentions of interrelations among the language areas.

In addressing the first point, the construction of a language battery involves various major considerations. A theoretical framework must be developed. The skills or objectives to be tested have to be outlined. An approach (integrative or discrete point) for assessing skills must be specified and test types (norm or criterion referenced) must be decided. The tests then need to be validated with the population for whom they are intended.

The second factor is that the ESLAB provides classroom teachers with a language profile of bilingual students' listening, speaking, reading, and writing skills. The battery identifies students' Independent, Instructional, and Frustration reading levels, and it groups students into five entry level categories (Beginner I, II; Intermediate I, II; and Advanced) for ESL and reading instruction. This type of initial assessment is a uniform procedure for providing continuity among bilingual classes and it facilitates organized record-keeping of student results.

The third factor is that information as to the mastery of language skills and the interrelations of the language areas was also attained for secondary bilinguals. The trend showed that students mastered aural/oral skills before reading and writing skills. It was noted that listening, speaking, reading, and writing are related, but because they examine different skills, they need to be tested discretely and integratively. The implication for teachers is that these language areas need to be taught separately and integratively.

Recommendations for the follow-up of this study are: (1) field testing the ESLAB with other language groups and (2) the construction and validation of batteries in other languages so that L_1/L_2 language profiles can be prepared for bilingual students, based on the notion that students may have varying degrees of proficiency in the native and second language.

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ED212156

ARTICULATION SKILLS IN SPANISH-SPEAKING CHILDREN

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INTRODUCTION

To date, the instruments available to speech/language pathologists for the assessment of articulation skills have been only for use with the monolingual English-speaking child. Diagnostic tests for Spanish-speaking individuals are few, particularly for articulation. A few Spanish articulation tests have been published, but these instruments have been poorly standardized or do not include normative data, rendering them diagnostically inadequate. Consequently, a serious problem exists for the diagnostician whose clientele includes Spanish-speakers and who must determine if a speech production is normal (i.e., developmentally expected to occur), deviant (i.e., not developmentally expected), or due to the interaction of two languages spoken in the environment (i.e., interference).

The purpose of the present research was to (1) develop an articulation test for Spanish-speakers, and (2) to field test the instrument in both a monolingual Spanish-speaking environment and in a bilingual English/Spanish environment.

Development of the Spanish Articulation Test

The *Spanish Articulation Test* consists of forty black and white drawings testing twenty-three different consonant phonemes in respective word positions (Table 1). The test includes specific phonemes of the Spanish language, such as B, đ, ñ, X, single-tap r, and multi-tap (trilled) rr. The test also makes provisions for phonemes that might occur in free variation, such as j/dʒ/ʒ. The test excludes little-used phonemes such as initial position /hw/, medial position /z/, and final position /đ/. Vowels and diphtongs are not tested, per se.

Subject Selection

To obtain normative data for speakers from a monolingual Spanish-speaking environment, children from four schools in Chihuahau, Chihuahua, Mexico were tested. The schools included two government day care centers, a private day care center, and a public elementary school. Children ranged in age from three years to six years and did not manifest any physical impairments, hearing losses, or obvious speech defects. The children selected, therefore, were considered developmentally normal based on teachers' observations and clinical judgements made by the investigator. Employing

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TABLE 1

Phonemes and stimuli items (by position) employed in the *Spanish Articulation Test.*

Phoneme	*Word*	*Phoneme*	*Word*
b	bandera	tʃ	chango
β-v	caballo	ñ	uña
p	pato	s	cintón
	lapiz		braso
t	tambor		zapatos
	gato	h-X	jarra
d	dedo		ojo
	indio	j-dʒ-ʒ	llave
đ	tenedor		anillo
k	casa	tʃ	chile
	baca		plancha
g	gallo	l	luna
	borrego		pala
f	foco		sol
	jirafa	r	corazón
m	mesa		flor
	cama	rr	ratón
n	nieve		perro
	conejo	w	hueso
	pan		agua

this criterion, ninety-seven children were included in the study: 50 three-year-olds, 21 four-year-olds, 13 five-year-olds, and 13 six-year-olds. Responses were recorded by this investigator and three bilingual graduate students in communicative disorders.

Results of the Chihuahua Study

Data from this first year preliminary study of Spanish-speakers from a monolingual environment revealed very interesting and unpredicted patterns. First, the correct, consistent use of sounds appeared to occur at an earlier age for the Chihuahua children as compared to English-speaking monolingual children in the United States. For example, the phonemes /t, l, s, tʃ, j-dʒ-ʒ, k, g, and ŋ/ were correctly articulated by 90 percent of the children by the age of three. These sounds are not consistently used correctly by monolingual English-speaking children until four years of age for /k/, for example, or until six years of age for /l/. Table 2 compares the data of the Chihuahua children against published data from the *Arizona Articulation Proficiency Scale* (AAPS) and the *Fisher-Logemann Test of Articulation Competency* (FLTAC).

A second surprising pattern was the early development of the single-tap r and trilled, rr, although, unlike the English central-palatal /r/, the Spanish alveolar r's were expected to develop late due to their complex physiological production. Yet, the single-tap r was appropriately articulated by age four and the trilled rr by age six. English-speaking children produce the palatal /r/ no earlier than age six (see Table 2).

An overall review of Table 2 reveals that ten consonants developed earlier in the Chihuahua children than monolingual English-speaking children

TABLE 2

Comparison of Age of Acquisition of Spanish phonemes by Monolingual Spanish speakers on the *Spanish Articulation Test* versus Age of Acquisition of English phonemes by Monolingual English speakers on the *Arizona Articulation Proficiency Scale* and *Fisher-Logemann Test of Articulation Competency.*

Phoneme	*SAT*	*AAPS*	*FLTAC*
p	3	4	3
b	6	4	5
w	5	3	–
m	3	3	3
f	4	3	4
t	3	5	6
d	4	4	5
l	3	6	6
n	3	4	3
s	6	11	7
tʃ	4	8	6
j	3	4	5
dʒ	3	6	7
ʒ	3	–	7
k	3	4	4
g	3	4	4
ŋ	3	5	5
h-X	3	3	3
r	4	(7)	(6)
rr	6	–	–
β-v	6	–	–
đ	4	–	–
ñ	3	–	–

(previously listed); six phonemes developed approximately at the same age level (/p, m, f, d, n, and h-X/); two phonemes (/b and w/) developed later in the Chihuahua children than in English-speaking children. This is understandable for the /b/ phoneme, since this stop sound was often substituted by the fricative /β or v/. Use of these three sounds for one another (as if in free variation) is quite common even for adult speakers of Spanish, and it is not until age six apparently that the child learns the phonological rules for correct use of the stop /b/ versus the fricative /β or v/. In English, there is no alternate use of /b/ with /v/ (especially by adults), so consequently one seldom observes a v/b substitution by an English-speaking child, thereby resulting in the use of /b/ as early as four years of age.

The lateness of the development of the /w/ phoneme (five years) by the Chihuahua children is surprising when compared to English-speaking children in whom the phoneme is articulated correctly by age three. However, this apparent difference may be due to a geographical dialect rather than a developmental delay pattern. Consistently, the error produced by Chihuahua children on the /w/ phoneme was the addition of a /g/ sound prior to the /w/. This may have been due to the stimulus word (agua) in which it is acceptable to produce a soft audible /g/ sound prior to /w/, as opposed to a very hard, loud /g/ sound. However, the addition of /g/ also occurred in the initial position of "hueso." If the /gw/production was counted correctly, the age of correct usage would decrease from age five to age three, being consistent with the English norms. A change of stimuli words may be necessary for better elicitation of the /w/ phoneme.

The New Mexico Study

As a continuation of the Chihuahua study, a second study was undertaken during the second year with Spanish-speaking children residing in southern New Mexico. The same procedures and stimuli were utilized, with the exception that the testers for this study were four trained speech/language pathologists employed by the school district. Children participating in this study attended six different public elementary schools. The data reported are based on 148 children, ages five to eight. The children tested were classified as either monolingual Spanish-speakers or bilingual Spanish-dominant speakers. The monolingual group was composed of 13 five-year-olds, 15 six-year-olds, 13 seven-year-olds, and 12 eight-year-olds. The bilingual groups was composed of 20 five-year-olds, 15 six-year-olds, 28 seven-year-olds, and 32 eight-year-olds.

Results of the New Mexico Study

Results of the study with the U.S. Spanish-speaking children were similar to those findings of the Chihuahua study. Since the New Mexico study did not include any child younger than five years of age, earlier ages of acquisition cannot be reported. However, analysis of the data revealed that regardless of classification (monolingual or bilingual), over 90 percent of the children by age five correctly articulated the following phonemes: /p, t, d, đ, k, g, f, m, n, ŋ, ñ, h-X, j-dʒ-ʒ, l, and w/. Likewise, the Chihuahua children also had learned these sounds by five years of age, if not earlier. The sounds not consistently used correctly by the age of five by either group included / b, β, s, r, rr, and tʃ/. Analysis revealed that neither the /b or β/ phoneme ever reached a 70 percent level of correct usage, even by age eight. Again, alternate use of one or the other phoneme prevented the reaching of the 90 percent level. The /s/ phoneme by monolinguals reached 85 percent correct usage by age five but did not increase with age thereafter. In the bilinguals, 90 percent correct usage for /s/ was not achieved until seven years of age, resembling more the monolingual English data (Table 2) rather than the Chihuahua data. The Spanish /r/ phoneme reached the 90 percent level by age six in the monolinguals and by age five in the bilinguals. These figures compare with the 4-year-old level observed in the Chihuahua children. The /rr/phoneme was produced at the 90 percent level by both groups by age six, which was the same age level found for the Chihuahua children. The /tʃ/ phoneme did not stabilize at or over the 90 percent criterion in either New Mexico group, which contrasts with the 4-year-old level found in the Chihuahua study. This is not too surprising since the New Mexico children substituted /ʃ/ for /tʃ/(shango/chango). The /ʃ/, of course, is a prevelant sound in English but does not exist as a phoneme, per se, in Spanish. Apparently, the exposure and use of /ʃ/ in these children while learning to speak English transferred onto their production of /tʃ/ while taking the *Spanish Articulation Test* (i.e., phonological interference).

Discussion

There are many comments that should be made regarding the above results. First, because of the preliminary nature of the studies, the number of children is small, and any interpretation of the data should be made with these figures in mind. This is not to say that the results do not reveal trends, but certainly the age-levels of consistent usage are not absolute. Secondly, one must be careful in comparing English phonemes with Spanish phonemes. Some phonemes are alike in both languages (e.g., f, p, etc.), but some phonemes are produced differently though the same symbol is used to represent both sounds. For example, the English /t/ is a lingua-tip alveolar sound, produced with aspiration in the initial position. In Spanish, the /t/ sound is a blade (not tip)-alveolar sound and is rarely aspirated. The same difference exists between the languages for the /d/ stop phoneme.

Despite obvious limitations of the studies and differences between the languages, it appears overall that monolingual Spanish-speaking children (at least from Chihuahua) do tend to master phonemes at an earlier age than monolingual English-speaking children or Spanish-speaking children living in the United States. Continuation of similar research in both Mexico and the United States is needed to verify the trends found in this two-year investigation. Of course, determining normative information for speakers from Cuba, Puerto Rico, and other Spanish-speaking countries would also be valuable data for speech/language pathologists. For the present, the preliminary data reported here can serve as a guide for diagnosticians who must decide if a Spanish-speaking child's articulation skills in Spanish are similar to those of the children reported in these studies (i.e., normal) or if a child's errors are deviant or due to interference.

ED212157

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LANGUAGE ASSESSMENT AT POST SECONDARY INSTITUTIONS

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INTRODUCTION

Since the inception of formalized bilingual teacher training programs in institutions of higher education, the area of language assessment of prospective candidates has remained a rich arena for research and model development. Virtually no studies have been conducted on the establishment of entry/exist level criteria for assessing languages in bilingual teacher training programs. In contrast, an overwhelming emphasis in educational research has been placed upon issues of establishing such criteria for limited-English-proficient populations in grades pre-K through twelve (Cummins, 1979, 1980; Dulay and Burt, 1980; Matluck and Mace, 1973; Estes and Estes, 1979; Maulden, 1979; Hardy, 1977; Cornejo, 1978; Curtis, Lignon, and Weibly, 1980; and Balasubramonian, 1979, among others). We begin this study with an overview of issues as they pertain to the topic. This will be followed by an analysis and discussion of relevant data from a national survey.

A number of earlier investigations implied the need for entry/exit level criteria through the incorporation of particular language competencies by teacher training programs (Sanchez, 1934; Blanco, 1975; Andersson and Boyer, 1970; Cordasco, 1976; U.S. Commission on Civil Rights, 1973; Flores, 1973; Valencia, 1970; Viera, Squires, and de Guevara, 1975; State of Illinois Board of Higher Education, 1974). The importance for considering the implementation of entry/exit level criteria for language assessment was underscored in Gaarder's less than veiled warning that the majority of bilingual teachers were inadequately prepared for classrooms (1970). Based upon earlier analyses of existing bilingual programs, the federally sponsored Maryland Conference on Bilingual Education offered a broad range of recommendations with implications for such criteria. Many of these recommendations were to remain unimplemented during following years (cited by MacCaulay and Ramirez, 1977).

During 1975-76, a survey conducted by the National Center for Educational Statistics found 218 colleges or universities offering some form of bilingual teacher training. Unfortunately, the second phase of this study as a comprehensive report remains on magnetic tape. For a discussion, see Waggoner (1978). Basic federal grants during this fiscal year amounted to $53 million for 207 institutions of higher education.

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An analysis by the former Department of Health, Education and Welfare of Title VII teacher training programs revealed needs in areas of second language acquisition and bilingual subject methodologies. However, the analysis failed to address areas of language assessment and development for potential teacher candidates, especially in the establishment of entry/exit level criteria. The impression left from the onset was that colleges and universities mobilized their efforts to obtain coveted federal funds, rather than formulating long-range training programs, including systematic criteria for entry/exit levels of target language(s) assessment. The importance of this theme is revealed to the reader throughout this paper.

MacCaulay and Ramirez (1977), underscored the urgency to carefully investigate the necessary requirements for teachers in bilingual education programs (also Ramirez, Gonzalez, et al., 1974; Rhode, 1974; Sutman 1979; Arciniega, 1977; Castillo, 1976; Carrillo, 1977; Gonzales, 1979; Rodriguez, 1980.) As colleges and universities developed bilingual degrees, two concerns relative to this exigency were identified: (1) higher education institutions simply relabeled existing courses as bilingual and regrouped them into a slightly different pattern. The inference, then, is one of a short-term economic expediency, perhaps taking precedence over a long-range moral commitment to the program. (2) Seldom were new programs hiring new faculty to teach courses that were appropriate to bilingual teacher preparation. Furthermore, potential chasms existed between suggested remedies offered by scholars, and the lack of implementation by colleges and universities.

Formulations by other researchers regarding target competencies for training programs articulated desirable linguistic skills, but also neglected to investigate the nature of entry/exit level criteria in language assessment by institutions of higher education. For example, the guidelines promoted by the Center for Applied Linguistics (1974) suggest a variety of competencies but neglect to suggest a manner of implementation by colleges and universities in establishing points of entry and exit. Similarly, competencies were offered in a specific or more general fashion from researchers and organizations without benefit of an appropriate data base regarding on-going practices by institutions (Palmer, 1975; Blanco, 1977: Martinez, 1975; Castillo, 1976; Brisk, 1978). Suggested competencies from Acosta and Blanco (1978) strongly recommended an exit-level language proficiency test that would include the evaluation of pedagogic competencies "in both languages." Inherent in the recommendation was some assessment process that would logically begin with students at the onset of study; hence the need for entry level criteria.

In contrast then, with its definitions and applications to limited-English-proficient students in public schools, the terminology of entry/exit level criteria for language assessment will be generally viewed for teacher training institutions in terms of overall preparation processes. The two important aspects for our purposes include the actual acquisition and manipulation of target language skills in subject areas (contextual basis). Both features of remedial and contextual basis will be discussed in another subsection relative to suggested model characteristics. It is important to note that a lack of consensus among colleges and universities pertaining to the establishment of criteria and assessment practices is evident with recent data from a study conducted by the RMC Corporation (Binkley, Johnson, et al. 1981).

Particular emphasis is warranted regarding the nature of entry/exit level criteria and quality of assessment processes, given studies on the relationships of teacher language to academic achievement (Bolger, 1967). It would follow that the lack of substantial criteria levels and assessment processes by training institutions would ultimately have some degree of negative bearing on the overall quality of teacher language. We find substantiation for this statement in the National Assessment Survey of Title VII ESEA basic programs that provided additional data through responses of surveyed teachers and directors. The greatest incidence of need for teachers and directors related to teaching content areas bilingually and bilingual teaching strategies. Consistent with these responses, the National Center for Education Statistics reported that a majority of teachers who were rated as Spanish/English bilinguals in their national survey possessed language skills not derived from professional training programs. Approximately one-third of this number (n = 14,000) were rated as having crucial academic preparation to teach subject content area to limited-English-proficient students (Waggoner, 1979; 1978).

An earlier study by Frank Ramirez (1974), found that 20 percent of bilingual teacher applicants in the Los Angeles Unified School District failed the language fluency test (also Resnick, 1976). A survey was conducted by the bilingual teacher training unit of the New Mexico State Department of Education the year before. It was found that 10 percent of the 136 bilingual teachers and aides sampled could function at a third grade level when administered a reading and writing test in Spanish. None were able to show acceptable proficiency at the fourth grade level (Pascual, 1979).

This brief overview underscores the need to raise a number of questions, especially in regard to entry/exit level criteria in language assessment, which remain largely unanswered. The recent study conducted by the RMC Corporation provides us with a valuable general overview of current practices. Nonetheless, no comprehensive data base has been assembled in response to some of the following concerns:

1. Who makes decisions regarding the establishment of criteria for entry/exit level language assessment in training programs and choices of instrumentation?
2. Who conducts the actual assessment of target languages?
3. Are there relationships between the experience of decision makers in programs and choices?
4. To what extent are public school, community sector and faculty, other than immediate program personnel, included in the decision-making process?
5. To what extent are opportunities offered to upgrade target language skills?
6. What are the relationships between these opportunities and opportunities to use target languages in educational experiences? To answer these and other concerns, we will continue with an examination of data from a national survey of bilingual teacher training programs in the United States.

DECISION MAKERS

Who makes the actual decisions in determining entry/exit level criteria for assessment of target languages? The sole decision maker according to twelve (20.3 percent) of the respondents, is the director of the program. (It is appropriate to note that the RMC investigation found that 28 percent of their sites reflected one or two key individuals who significantly affected the operation of the program). The largest incidence occurred with 40.7 percent of programs reporting decision-making by immediate faculty. The next highest incidence (23.7 percent) was found in programs where decisions are made by bilingual faculty from sectors other than their immediate program (e.g., foreign languages, language testing centers). The remaining 5.1 percent (n=3) consisted of shared decision making by these others in conjunction with program directors (one program that reported no assessment procedures responded with the director as decision maker in a hypothetical situation of near-future need).

Only 15.3 percent (n=9) of the respondents reported better than average participation of public school personnel in their decision-making process. At the same time, 16.9 percent (n=10) reported average participation. Finally, 54.2 percent (n=32) reported no participation while another 10 percent cited involvement of public school personnel as low. A similar pattern of responses evolved for the processes of involvement in establishing English language criteria.

Better than average community involvement (very high/highest ratings) accounted for 22.1 percent (n=13) of the respondents, while 27.9 percent (n=16) reported average participation. A remaining 18.6 percent (n=11) claimed low participation while another 22 percent (n=13) reported no involvement. Six (10.6 percent) of the cases were incomplete for consideration.

The apparent higher percentage of community involvement may be explained in part by existing advisory boards from a number of institutions. However, advisory boards may also be token representatives in order to meet funding requirements. Some writers in the field have suggested benefits of community involvement in training programs (Brisk, 1978; Pascual, 1979).

It is interesting to note that 15.1 percent (n=9) of the target programs reported a better than average student participation in establishing language assessment criteria for entry/exit levels. While 23.7 percent (n=14) cited average. Another 18.6 percent (n=11) were low; 40.7 percent (n=24) responded with no participation and 1.7 percent (n=1) of these cases failed to respond. Student participation was higher than anticipated and may be due to opportunities for internship, scholarship and fellowship roles. This brings us to the issue of who conducted the actual assessment of target languages.

Less than 10 percent of program directors unilaterally conducted assessment of target languages. This type of assessment was found in programs characterized by two target languages and less than the reported mean number of years of program existence. Some association was found between assessor(s) of languages and the decision maker(s) for entry/exit level criteria. Nonetheless, it was not high enough to make an absolute judgement. The largest number of respondents reported that assessment was conducted by all bilingual program faculty (see Table 1).

Faculty from other sectors reflected involvement from foreign language

TABLE 1

CONDUCTORS OF LANGUAGE ASSESSMENT

CATEGORY	n=57*	Percent
1. Program Director	5	8.5
2. All Bilingual Program Faculty	22	37.3
3. Some Bilingual Program Faculty	3	5.1
4. Faculty from other sectors	7	11.9
5. Bilingual and other faculty	20	33.9

*Two missing responses refer to two programs reporting no formal assessment processes.

departments and English language centers. The domination of assessment processes for students in bilingual programs by these sectors, may be a considerable concern, ascertained from a number of comments volunteered by respondents. We also find evidence that the poorest interdepartmental relations arose between bilingual and foreign language sectors (Binkley, Johnson, et al., 1981). This was attributed to the incompatibility of philosophies regarding the importance and nature of student proficiency in target languages and/or competition for student populations. As a consequence, potential struggles between bilingual and foreign languages sectors may transcend real issues of economic need, and surface as the symbolic control of testing processes. This control would portend eventual funneling of students into a series of courses by one sector as opposed to another.

Respondents for this study who indicated a large degree of institutional control over target languages, mentioned such instruments as the M.L.A. test and the TOEFL, which are popularly utilized by foreign and English language sectors. However, it was difficult to distinguish between individual, program, and institutional choice since a high degree of probable coincidence existed.

Given this pattern of involvement, what were selection choices of decision makers regarding assessment? In ascertaining entry/exit level criteria for English and other languages, respondents chose the kinds of assessment shown in Table 2.

TABLE 2

PROGRAM PREFERENCE FOR LANGUAGE ASSESSMENT

	I. English		II. Other Lang.	
ASSESSMENT	(n=57)	Percent	n=56	Percent
1. Commercial Instruments	8	14.0	6	10.7
2. Non-Commercial Field Tested Instruments	4	7.0	3	5.4
3. Informal Interviews	5	8.8	3	5.4
4. Observations	2	3.5	2	3.6
5. Other**	38	66.7	42	75.0

**Includes combinations of the above or other instruments

Compared to the responses in Table 2, the RMC preliminary data indicated that the interview was most often utilized by their sample for target languages other than English. The RMC study further found that their sample failed to establish specific criteria for assessing student language proficiency; accordingly, students were expected to be fluent in target languages, although no definitions were established in regard to the nature of fluency. Most programs saw no need for English requirements beyond those of the university as a whole, since the majority of students were educated in the United States and considered fluent in English. Assessment of students at exit levels occurred more frequently before their graduation from institutions in states with certification requirements in bilingual education. The reverse occurred in states without certification requirements. No general pattern appeared among respondents of this study in states with certification requirements.

Turning to concerns regarding availability of remediation courses in target languages, we find that only 3.4 percent (n=2) of respondents ranked available opportunities in English as low or none, as compared to 8.5 percent (n=5) for other languages. Another 66.1 percent of respondents (n=39) reported better than average opportunities for English language remediation, in comparison to 62.7 percent for other languages. The highest opportunities for utilizing languages in academic settings went to English in contrast to other target languages. Opportunities for upgrading language proficiency materialized in the following manner. Remedial coursework was provided in the target language to upgrade competencies. Subject area coursework was presented in target languages. Field experiences were provided for students with the opportunity to utilize target languages. Programs that exceeded two target languages appeared to rely less upon utilization of target languages in formal class surroundings, and more upon field experiences. The data substantiate the contention from the RMC study that the utilization of languages in classrooms depended largely upon the instructor's facility with the language, and with the number of target languages in the program. As the number of target languages increased, across-the-board opportunities for remediation in languages other than English, and actual classroom utilization, seemed less than that provided by programs with only two.

It is appropriate to note that 34 percent of all programs in the RMC sample required their students to take one or more remedial language courses. Another 26 percent of the programs recommended coursework but did not require the student to take them. As the academic level (i.e., masters, doctorate) of the program increased, the number of required courses was found to decrease. Given the nature of this study, this author's survey could offer only general substantiation of this tendency in this instance, rather than a definitive statistical comparison. No pattern appeared in the preliminary tabulations to indicate correlations between opportunities for remediation and types of assessment instruments.

Experience, Academic Preparation and Institutional Commitment

An analysis of data shows that directors of programs average a little over seven years of teacher training experience on college and university levels. Interestingly, the average number of these years in bilingual teacher training for directors was less than five and one-half years. Throughout, the standard deviation indicates a rather large distribution spread regarding experience and academic preparation. Overall teaching in public schools for directors averaged less than five and one-half years, of which less than five were in bilingual education (see Table 3). In comparison, faculty in bilingual programs averaged less than five and one-half years in teacher training. Teaching in public schools averaged about two years for faculty, of which most experience was in bilingual education.

TABLE 3

ACADEMIC AND EXPERIENTIAL BACKGROUND OF SAMPLED PROGRAMS (n=59)

	Directors			Program Faculty		
CRITERIA	$\overline{X}$	s	Mode	$\overline{X}$	s	Mode
Teacher Training (n=59)	7.034	4.522	5.000	5.408	4.439	2.000
Bilingual Teacher Training (n=59)	5.408	4.439	2.000	2.5927	3.475	1.000
Teaching (Public School) (n=55)	5.36	4.754	1.000	2.014	5.899	1.000
Bilingual Teaching (n=55)	4.966	6.305	1.000	1.978	4.185	0.050
Academic Prep. (n=59)	5.315	4.138	5.000	4.166	5.084	2.600
Assessment: Univ. Level (n=55)	4.648	3.535	4.000	1.6105	2.756	1.000
Assessment: Public School (n=57)	2.822	3.611	1.000	1.709	5.252	1.000

In terms of academic preparation, directors averaged less than five and one-half years of formal (e.g., college, university) and informal (e.g., workshops, seminars, etc.) training in second language acquisition and language assessment. Faculty possessed a little over four years experience. As for actual language assessment experience in college and university training programs, directors averaged a little more than four and one-half years compared to a little more than a year-and-a-half for faculty. Language assessment experience in public schools averaged a little less than three years for directors and a little more than a year-and-a-half for faculty. Data from the RMC sample reveals that 90 percent of the program directors and 85 percent of the education faculty have or had at one time a teaching credential. This in itself does not denote any large-scale experience on behalf of these individuals, since such credentials in most instances can be obtained upon graduation from an accredited teacher training institution.

The ramifications of the aforementioned data suggest that current faculty may have much less overall teaching experience in public school, as well as less specific experience with limited-English-proficient students, than actual teachers in public schools. Doctoral degrees might not offer a substantial substitute since, as one of my prominent colleagues so eloquently put it, the trainers of the teachers, and the professionals who write about limited-

English-speaking students and offer potential directions, "may never have seen a kid in their entire lives within a classroom setting." The situation is further compounded by the above-cited evidence that shows possible reluctance and/or inability of colleges and universities to involve experienced personnel from public schools in decision-making processes. The argument has been advanced that the relative "newness" of the field has, in essence, shaped the dilemma (Seidner and Seidner, 1981b). We will attempt to offer some insight through our data based upon approaching the issue of institutionalization. Henry Pascual (1979) reminds us of our enthusiasm to "apply severe criticism to public school programs," or pressure upon publishers for better materials. Yet we somehow neglect to question colleges and universities, which remain sacrosanct and appear to "do no wrong."

Inherent in this statement is the ultimate concern of institutional commitment to programs and to the actual philosophical premises of bilingualism and bilingual education. For purposes of this paper, two particular concerns have been identified, which relate directly to this study: (1) commitment of resources to the program, and (2) commitment to continue the program beyond the span of time dictated by funding sources other than from the university. Obviously, both concerns will ultimately influence the establishment and continuity of entrance/exit criteria for language assessment.

As shown earlier, a miniscule percentage of respondents indicated the total support of programs by the respective institutions. On the surface, some commitment of institutional resources appears with the observation of the RMC sample that the proportion of program directors and faculty funded partially or entirely from institutional sources was quite high (Binkely, Johnson, et al., 1981). A secondary observation was the acknowledgement of other bachelors and masters level programs alongside Title VII funded programs in at least ten institutions. It would be naive to assume that colleges and universities are in the education business for sheer altruism. An examination of a number of training programs that claimed some or all absorption of the director's and faculty salary, shows various distributions of funding among student reimbursements (tuition, materials, etc.), faculty costs (including trips), institutional overhead, and other operational costs. If Title VII funding were to cease, would training institutions continue with commitment to programs? Given the data above, how significant are institutional payments (in part or whole) of directors' salaries? Will this apply to other program faculty? The RMC study suggests that interviewed directors believe that the institutions would continue funding programs beyond fiscal expectations. How valid are these kinds of remarks from respondents who seek funding, when interviewed by quasi-representatives of the ultimate funding source? An important piece of the puzzle was cited earlier, namely the 15 percent of respondents who took the time to indicate that their programs were no longer in existence. Another study would be welcome to examine the extent of this phenomenon, in relation to particular sources of funding and institutional commitment.

Another important characteristic of institutional commitment would appear to be one of retraining. If institutions rely upon personnel from departments other than bilingual, claim a shortage in trained professionals (Binkley, Johnson, et al., 1981) or stress the relative incipiency of such training programs, what is the commitment, then, to provide adequate staffing? Part of the answer may be found through inservice retraining. At least one national task force recommended a locus of support for inservice training in colleges of education (Kersh, 1978). No evidence has surfaced to substantiate an independent initiative or commitment of this nature. In fact, a recent study subsidized by the American Association of Colleges for Teacher Education examined the commitment of seventeen institutions to inservice education. The potential position of the Office of Bilingual Education and Minority Languages Affairs in securing funds and credentials was deemed a key factor in institutionalization (Carey and Marsh, 1980). Additional light may be shed on the nature of commitment (or lack thereof) by examining the actual profile of immediate faculty within bilingual programs.

As shown above, an analysis of data collected from our sample revealed that directors of programs are the most experienced personnel. A further examination supported the premise that a large number of individuals were ensconced in areas other than bilingual, at the onset of Title VII funding. However, the mean years of program existence exceeds the mean years of faculty teacher-training experience. The large distances between directors and immediate program faculty suggests a lack of long-range commitment by training institutions to maintain the latter. Additional information from the RMC study shows that only 31 percent of all program directors had tenure while another 34 percent were in tenure-track positions. The remainder were employed along non-tenure lines. Over 60 percent of faculty in bachelors/credentials programs were on tenure tracks, the percentage increasing (for directors as well) as the academic level (i.e. masters, doctoral) increased. The highest overall evidence of academic rank for directors occurred on assistant and associate professor levels, compared to instructor and assistant professor for faculty.

In short, university hiring and retention policy may be a critical factor affecting alternative choices for selecting processes and entry/exit level criteria for language assessment of potential bilingual teachers. Perhaps any reluctance vis-à-vis commitments by institutions is due in some part to the relatively short nature of existence of bilingual training programs. Colleges and universities seem to favor a philosophic framework, expressed by one institution as the incorporation of faculty who are "academically respectable and appeal to the scholarly" (Burke, 1972; Broudy, 1962; Arends, 1973). Although the goal may be praiseworthy, the interpretation of terms by a select guardianship might at least prove troublesome. This is especially so for a relatively new program in its quest for academic credibility and that seeks to withstand the test of time. The factor of continuity is obviously critical and portentously mortal for the implementation of these processes, and contingent upon institutional commitment of resources and maintaining experienced personnel.

DISCUSSION AND SUMMARY:

A pattern of decision making emerged with a number of directors making decisions for entry/exit level criteria in language assessment. As predicted, involvement of public school personnel was minimal.

One of the expected outcomes was the larger rate of participation (22 percent) of community personnel. Also as anticipated, the largest incidence occurred with programs sharing decisions between director and bilingual faculty (40.7 percent), followed by combinations with faculty from other sectors than the immediate program.

An analysis of data revealed a tendency for director-made decisions to modestly correlate with a preference for commercial instruments, particularly discrete-point tests in other languages ($n=51$, $r_s=.3634$, $p<.05$). As predicted, assessment conducted by faculty members from sectors other than the immediate bilingual program, showed similiar selection of instruments for English and other target languages. Selections of other combinations of instruments, including observation measures and methods, were favored by respondents with shared decision making that involved combinations of sectors.

It was hypothesized that bilingual faculty would have a low number of years of experience in the public sector. Unexpectedly, an analysis of data showed a significant difference between experience in public schools, colleges/universities and academic preparation between directors of programs and bilingual faculty. The differences were large enough to add to speculation on the nature of institutional commitment to bilingual training programs.

Significant data regarding the length of program existence and the number of years of teacher training experience for bilingual faculty raise a number of serious issues regarding the intentions by colleges and universities to maintain programs and retain faculty. Ultimately, decisions by institutions to commitment of resouces and retention of experienced faculty will effect the nature of entry/exit level criteria and assessment processes in target languages. A secondary source of data in support of these issues emerged from a 15 percent return that claimed discontinuation of programs by colleges/universities due to the cessation of Title VII funding. It is questionable whether programs will continue on institutional funds following termination of Title VII funding.

A strong correlation was observed between opportunities for remediation and those for language utilization. However, a distinction in entry/exit level criteria was obvious in language assessment for remediation purposes, and for language in context of academic subject areas.

Director-made decisions supported a trend away from contextual assessment, emphasizing remediation. A unilateral emphasis upon remedial assessment, as hypothesized, was observed with decision and assessment processes being made by faculty other than bilingual, for English and foreign languages.

Although not uniform enough to provide a general pattern, the data revealed some degree of influence by a number of states with certification requirements in bilingual education upon the assessment practices of respondents. In one of the most concerned and flexible of these states, representatives from bilingual training programs served on an advisory board to recommend assessment procedures and certification requirements.

The highest percentage of respondents cited assessment of target languages conducted by all bilingual faculty (38.6 percent) followed by bilingual and other faculty (35.0 percent) in support of the contention that sectors other than the immediate bilingual program within the university influenced assessment processes. Less than 10 percent of program directors unilaterally conducted program assessment. Instruments selected by foreign language departments and English language centers were mostly commercially produced. The utilization of commercial instruments suggested a potential subordination of program objectives and entry/exit level criteria to that originally established in the construction of the instruments. In a few instances, the assessor for target languages was drawn from the community and/or public school.

As originally hypothesized, a more heterogeneous approach to assessment occurred in programs with increasing numbers of target languages. More combinations of observation, interview, and questionnaire techniques were observed to be employed. This may be partly due to a comparable lack of instruments in a number of target languages.

With this in mind, it is hoped that this study is a beginning in a series of others that will efficaciously increase our current knowledge regarding teacher training processes in colleges and universities—promoting educationally sound decisions and improving upon current practices.

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ED212158

ETHICS INVOLVED IN THE EVALUATION OF BILINGUAL EDUCATION

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As justice must be an important and egalitarian factor in many social processes, so must it also be a profound and necessary standard by which educational programs are judged. House depicts the process of evaluation as a tool in deciding who gets what:

> "Evaluation is by its nature a political activity. It serves decision-makers, results in reallocation of resources and legitimizes who gets what. It is intimately implicated in the distribution of basic goods in society. It is more than a statement of ideas: it is a social mechanism for distribution, one which aspires to institutional status." (House, 1976, p. 76)

House further emphasizes that, "evaluation should not only be true, it should also be just."

The position taken in this article stresses the need for bilingual education—a decidedly nontraditional type of education program—to be evaluated using equitable and pertinent standards of judgment. Only through the application of such standards will a just and true evaluation be achieved.

Presented in the following discussion are two types of evaluation models currently used in evaluating bilingual education. Each is examined with respect to the ethics underlying the evaluator's evaluation techniques and findings, as well as its philosophical and practical appropriateness in the evaluation of bilingual education programs.

Background: Federal Law and Programming

The Elementary and Secondary Education Act of 1965 had a profound impact on the American education system. Prior to 1965 this system had consisted of traditional curricula oriented toward urban, middle-class, white children. The ESEA introduced a variety of specialized educational programs whose immediate objectives were to address the special educational needs of a diverse minority population, but whose long term outcomes carried the promise of social change (Cohen, 1973).

In addition to effecting major curricular changes, this legislation (ESEA) assumed a definitive role in shaping the direction and scope of present day educational evaluation. Prior to the enactment of the ESEA, programs and their evaluations were geographically and politically constrained; they were local enterprises without far-reaching national effects. Specific state and/or local monies supported educational programming and its corresponding

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evaluation activities. On the other hand, programs sponsored through the ESEA were, in a sense, funded from a "common pot" (Weiss, 1972). This change in funding structure led to the evolution of educational programming and evaluation from their previous status as localized and politically confined projects to their development as endeavors that now encompassed national dimensions (Weiss, 1972). Federal regulations mandated accountability; evaluations were required to produce empirical evidence of program outcomes. The evaluation data collected in response to such mandates became the basis for far-reaching decisions regarding maintenance, institutionalization and expansion of successful programs as well as modification or elimination of unsuccessful ones.

Ensuing programs such as "Project Head Start," "Project Follow Through," "Title I of the 1965 ESEA," and the "Title VII Amendment (Bilingual Education Act) to the 1968 ESEA" were innovative and nontraditional. In addition to their goal of fulfilling particular academic needs, these programs appeared to have still another goal; specifically, to raise the social and economic status of the target groups. Because of the newness of this emphasis, these programs presented social scientists and evaluators with practical and theoretical considerations previously unencountered. They found they had to ask themselves:

1. How can a practical evaulation be operationalized on a nation-wide basis?
2. How can we measure the success of a specialized academic/social change program that may well be influenced by variables hitherto unmeasured—or perhaps unidentified?

David Cohen captures the urgency of the situation when he says:

> Simply to recite these differences (between traditional and innovative educational programs) is to suggest major new evaluation problems. How does one know when a program that reaches more than eight million children "works?" How does one even decide what working means in the context of such large-scale action ventures? Difficulties also arise from efforts to apply the inherited stock-in-trade evaluation techniques to the new phenomena. If the programs seek social change, is it sensible to evaluate them mainly in terms of achievement? If they are national action programs, should evaluation be decentralized? (Cohen, 1973, p. 97)

Although the literature relating to evaluation theory and research is much richer and more sophisticated today than it was a decade ago, actual results of evaluation studies indicate that from an evaluation perspective, many of the problems posed by the structural as well as the theoretical intricacies of the innovative programs remain unsolved. Guba (1969), in speaking about the failure of traditional methods of evaluation, states that "Innovations have persisted in education not because of the supporting evidence of evaluation, but despite it." Evaluation findings many times have contradicted what practitioners have come to believe through first hand experience—that educators and schooling can make a difference in a child's achievement regardless of his social or cultural background. A major report circulated by the Office of Education (Coleman, 1966) states that there is a ". . . relatively small amount of school-to-school variation that is not accounted for by differences in family background, indicating the small independent effect of variations of school facilities, curriculum and staff on achievement."

The Role of Justice

Invariably, decision makers, educators, evaluators, parents, and the general public must rationalize the persistent use of evaluation techniques with respect to the "justice" that evaluation delivers. Evaluation techniques and methodologies critically impinge on the concept of justice. The view of justice that one adopts will subsequently place limitations on the evaluation approaches one takes, the activities one finds legitimate, and what arguments count as significant (House, 1980). Thus, the evaluator's perception of justice will affect how he/she will go about determining program effectiveness. It is this same perception that will subsequently color eventual findings and recommendations made. This variability in approach is a political element in evaluation. Recognition of its political nature inevitably demands that an evaluation be true and just (House, 1976).

In this paper the issue of "justice" in terms of program evaluation is examined with specific reference to the evaluation of one academic and social change program provided through the ESEA—Bilingual Education (The Elementary and Secondary Education Act, Title VII).

Currently utilized evaluation approaches are examined and their appropriateness for use with this program is discussed. The models or approaches are divided into two classifications as proposed by House (1978): the utilitarian ethics and the intuitionist/pluralist ethics. Specifically, it is suggested that the use of an innovative evaluation approach with an innovative program such as bilingual education may well be an appropriate methodology. The responsive model (Stake, 1975) is recommended as a viable alternative in the evaluation of bilingual education programming.

Bilingual Education as a Social Action Program

Bilingual education programs rightly fit the description of what Cohen (1980) has defined as a "social action" program under the ESEA. Bilingual education meets his necessary criteria of "social action" programs in that it: (1) aims at improving the quality of education for the disadvantaged populations, (2) is *not* aimed at improving conditions at one specific school site, but rather is directed at millions of children, and (3) has been created and administered by the federal government and not by any individual administrator or educator.

As specified by law, the aim of a bilingual education program is threefold. Specifically, it should:

1. provide the child with instruction in the English language,
2. provide the child with instruction in the core subjects—in English or in his/her native language while he or she is still in the process of becoming proficient in English,
3. facilitate his/her adaptation to the mainstream society. (Gonzalez, 1978).

The first two aims are directed at fulfillment of the child's immediate educational needs and might almost be viewed as a compensatory or remedial strategy. The third relates to the child's long term social goal: the attainment of a higher socioeconomic status.

This type of dual goal-setting just described, i.e., academic and social, is a characteristic that bilingual education shares with many of the social action programs brought in under ESEA (i.e., Project Head Start, and Project Follow Through). The problems associated with the measurement of success of these (ESEA) programs continue to confound evaluators (Guba, 1969). Bilingual education has been particularly troublesome (Burry, 1979). It has most of the problems common to nonethnically oriented programs—specifically those relating to (1) diversity, obscurity, and conflict within the goals of nation-wide programs, and (2) the lack of clarity regarding measurement framework. Unlike other programs, however, bilingual education adds a complex dimension to the other difficulties by introducing still another reality—teaching and evaluating in *two* languages. Cohen (1980) stresses that the greatest debates among bilingual educators center around oral language development in two languages and related testing. He lists several relevant questions:

1. Is a child's oral language development as important as (or more important than) reading development?
2. Should oral language skills be used to identify a child's dominant language?
3. Should an assessment of oral language be based on receptive language abilities or productive language abilities?
4. Should reading skills development and oral language development be related in a program?
5. Should a program emphasize oral language development in Spanish, oral language development in English, or both?
6. Can there be parallel oral language development in two languages? (Cohen, 1980, p. 36)

It has been suggested that one of the reasons that programs, particularly those that are social action oriented, fail to show significant positive results on national or state-wide evaluation studies is that inappropriate evaluation designs have been utilized in the evaluation of the programs (Cohen, 1973, Weiss, 1972). Gonzalez (1978) states that a logical conclusion to explain why bilingual education has not shown the expected results is that the evaluation models being used are inappropriate or biased. Limited existence and availability of appropriate instruments for measurement of language proficiency as well as achievement in core subject areas has resulted in wide variability of evaluation methods and criteria adopted by schools across the country, e.g., methods employed for gathering achievement data may vary drastically, not only from state to state, but also from school to school within the same district. Why then have evaluation models not been modified to counteract these phenomena? Once again, some observations made by Cohen (1973) are timely. He points out that partially out of habit, partially due to a lack of expertise or experience with more innovative evaluation models, and partially in response to the federal demand for quantitative evaluation data, evaluators continue to use the traditional behavioral objectives model in the evaluation of ESEA's innovative programs. Bilingual education is no exception.

The following section discusses the appropriateness and inappropriateness of the utilitarian and the intuitionist/pluralist models in evaluating bilingual education programs.

The Utilitarian Model

The first model discussed here is the utilitarian or as House calls it, the "classical" approach (House, 1976). House defines the "classical" approach to evaluation in the following manner:

> The student-gain-by-testing approach is based on utilitarian ethics. Utilitarian ethics according to Rawls (1971), stipulates that a society is just when its institutions are arranged so as to achieve the greatest net balance of satisfaction as summed over all individuals. The principle of utility is to maximize the net balance of satisfaction. Utilitarianism requires that there be a common measure or index of satisfaction in order that quantitative calculations of utility can be made. In education, this common measure is almost always construed to be standardized test scores. It is the surrogate index of satisfaction (House, 1976, p. 76-77).

Ostensibly, the utilitarian ethics represent the first of two concepts of justice examined in the context of this paper.

According to utilitarian ethics, test scores are perceived as the index of good, that being the maximizing of the good for all students. House indicates that under these ethics the best educational programs are those that, of the available alternatives, produce the greatest gains in test scores. The means by which evaluation can measure this gain in test scores is by experimental design, instrumentation and statistics. These procedures can effectively determine the "best" educational alternatives by use of logical and quantitative methodologies.

Of particular relevance to bilingual programs and other ESEA programs aimed at the low-income, disadvantaged students is the dictum that education must maximize satisfaction. The utilitarian ethic is not interested in satisfying each *individual's* choice or need. Rather, it seeks to maximize the satisfaction of *all* individuals. Distribution of basic goods or test scores among individuals is not nearly so important as the total sum of satisfaction. Since maximizing is what really counts, one person's low test scores may be balanced by another person's high test score. The assumption is that it may be perfectly just for achievement scores of upperclass students to be maximized and for those same students to be advanced in their social positions—even though this arrangement puts lower-class children at a distinct disadvantage (House, 1976). House facetiously states that "after all, everyone must be free to advance his/her own good; and since what is right is that which maximizes the good, upper-class actions are both right and good. How could it be otherwise?"

Indeed, there is a moral dilemma in that the utilitarian ethics clearly are biased toward the upper-class students, while at the same time these ethics influence how educational programs aimed at lower-class students are being evaluated. Utilitarian-based evaluation models demonstrate a clear trade-off of lower-class satisfactions for higher-class satisfactions. In an article written by House (1978) entitled, "Assumptions Underlying Evaluation Models," he states that the systems analysis (the evaluation procedure used by the federal government), the behavioral objective (the evaluation procedure proposed by Tyler, 1950; Bloom, 1971, Popham, 1969, and Provus, 1973), decision making (Stufflebeam, 1968) and the goal-free (Scriven, 1972) approaches are all based on a utilitarian concept of justice. These approaches attempt to determine the greatest "social worth" by maximizing a small number of variables, a goal set, a decision maker's preference, or weighing outcomes. They try to arrive at a judgment of overall social utility that in turn leads to maximum satisfaction in society. Each takes a slightly different approach to demonstrating the justice of maximizing social utility.

The Utilitarian Model and the Evaluation of Bilingual Programs

An issue closely related to the measurement of social utility of educational programs by utilitarian ethics is that the common measures (standardized achievement tests) to determine the "good" of programs many times favor higher-class students over lower-class students. It has often been stated (Olmedo, 1977, Oakland, 1973) that testing of minority children has been linguistically, culturally, and ethnically biased. To some extent, these tests have been used historically for the explicit purpose of selecting some people into, and keeping others out of, social groups (Karier, 1973). House (1980) states that these tests "may be used to legitimize inequalities in the society." The continued use of evaluation models based on utilitarian ethics must be questioned by the evaluator if he is to use the standard of justice to judge them. Bilingual education, a program designed to assist students to achieve academically and also to adapt to mainstream society, has been evaluated using utilitarian ethics. These ethics are in contradiction to the program goals. The contradiction lies in the fact that bilingual education programs stress the special and individual needs of students while the evaluations using utilitarian ethics stress the overall needs of all individuals in a society with a particular emphasis on the satisfaction of upper-class needs.

The Intuitionist/Pluralist Model

The second concept of justice is based on intuitionist/pluralist ethics. Unlike utilitarian ethics, the intuitionist/pluralist ethics do not have an established principle such as the principle of "maximizing the greatest net balance of satisfaction as summed over all individuals" (House, 1980, p. 122). Thus, the intuitionist/pluralist ethics have a multiplicity of principles by which judgments can be made with no explicit method or set of priority rules for weighing these principles against one another. While the utilitarian ethics might stress the gain in test scores because they will maximize the net balance of satisfaction as summed over all individuals, the intuitionist/pluralist ethics would identify test scores as an important but not central issue. Test scores might be only one of many issues mentioned (i.e., attendance, classroom participation, student attitude and teacher attitude) that effect school performance. House (1976) describes this process in the following manner:

> By admitting the views and consequently the criteria of diverse groups, the new evaluation has arrived at a position either of intuitionism or perhaps of relativism. The perspectives and demands of various groups

> must be presented without any way of ordering or choosing among them. This plurality of "first principles" Rawls calls intuitionism . . . One strikes a balance of what's right primarily by intuition (House, 1976, 82-83).

The intuitionist/pluralist evaluation approaches employ subjective epistemology while the utilitarian ethics rely on the objective epistemology. The subjectivists (i.e., intuitionist/pluralist) are less interested in arriving at a proposition that is "true" (in the experimental, generalizable sense) than in relating the evaluation to the particular experience of the audience for the evaluation. There is an attempt to obtain valid insights within the frame of reference of the groups for whom they are working (House, 1976). House goes on to state that:

> It is assumed that there is a gap between language and experience. Tacit rather than explicit knowledge is what the evaluator seeks. The evaluation is intentionally context-bound and findings are interpreted in context. Since the audience may well have a firmer grasp of the context, based on greater experience, the audience's interpretation of an event may be superior to that of the evaluator (House, 1978, 8).

The intuitionist/pluralist will value the participation of persons directly involved with the educational program. Their participation consists of sharing with the evaluator the viewpoints and opinions of the program.

The evaluator will use these viewpoints and opinions (which are multiple principles, criteria, and weights of the people involved in the program) to judge the program. By doing this, the evaluation is not looking for one single judgment of worth as the utilitarian models do, but rather it attempts to seek the worth in terms of those most involved and affected by the program. House (1978) states that there are several evaluation models that attempt to follow the intuitionist/pluralist concept of justice. The art criticism (proposed by Eisner, 1979), professional review (proposed by professional associations, e.g., Carpenter, 1970), quasi-legal (proposed by Wolf, 1974), and the case study approaches (proposed by Stake, 1975) are all approaches based on an intuitionist/pluralist concept of justice.

Justice is rationalized on the basis of diminished elitism as well as on the enhancement of the understanding of a particular audience concerning the programs. Education is seen as a craft that does make a difference in children's achievement scores, rather than a set of explicit, externalized techniques.

The Case Study: An Intuitionist/Pluralist Approach to Bilingual Education

An especially promising alternative in the evaluation of bilingual education programs is the case study approach. Bilingual education might best be served if a *just* evaluation model is utilized that will encourage freedom of viewpoints and opinions, and a multiplicity of criteria and standards by which to judge it. The case study model would allow for the fact that bilingual education has a variety of purposes. In addition, presentation of diverse perceptions of bilingual education is facilitated by this model.

The literature concerning the evaluation of bilingual programs (Bissell, 1979; Burry, 1979; Cohen, 1980; Carrillo, 1979; Danoff, 1978; Troike, 1978; Shuy, 1978; Zirkel, 1978), reveals that the utilitarian evaluation models have been most widely used. Perhaps the key influencing factors as to why evaluators have selected these models has been federal and state policies concerning objective-based evaluations (Burry, 1979; Irizarry, 1978). These policies have affected not only bilingual education but almost every educational program receiving federal and state monies. The traditional or behavioral objectives model of evaluation is based on the assumption that all learning outcomes are measureable, i.e., quantifiable. The traditional model emphasizes student performance, mastery ability, and aptitudes; progress is measured through utilization of prespecified behavioral objectives and the use of standardized achievement tests. The model may also rely heavily on pre-post test designs. Stake describes a behavioral objective or "preordinate" evaluation as follows:

> Preordinate studies are more oriented to objectives, hypothesis and prior experience, mediated by the abstractions of language. Preordinate evaluators know what they are looking for and design the study so as to find it. (Stake, 1975, 20)

The application of the utilitarian behavioral objectives model might well be appropriate for use with a program in which conflicting realities do not exist. In bilingual education, however, as in many of the academic and social action programs initiated in the 1960s and 1970s, consensus regarding program goals and framework of measurement is nonexistent. In particular, Spolsky, Green & Read (1974) state that certain factors render bilingual education unfavorable as a candidate for evaluation by the behavioral objectives approach; the factors are psychological, sociological, economic, political, religiocultural and linguistic. Other critical factors that can be used to argue the inappropriateness of utilitarian type models are the following:

1. The lack of structural and ideological uniformity at the operational level of the program. Although Title VII mandates an assimilationist policy, not all programs function under this ideology. Studies reveal that there exist among programs varying degrees of emphasis on aspects of native language and cultural maintenance (Gonzalez, 1978, 1978a).
2. The lack of well-defined, culturally appropriate criterion-referenced achievement tests available for use in English *and* the child's native language. Currently available norm-referenced standardized tests are culturally-biased and inappropriate with nontypical populations (Olmedo, 1977; Oakland, 1973).
3. The pre-post test and control group design is frequently unrealistic and/or impractical due to:
   A. unavailability of control groups
   B. lack of scientific knowledge regarding the time span considered adequate for the visible impact of bilingual programming upon the child's learning (Gray, 1978).
4. Bilingual education programs have three goals—two short-term educational goals and one implicit long-term socioeconomic goal. The behavioral objectives approach could attempt to evaluate only the educational goals. The long-term social change aim of the program would be ignored. Specifically, the emphasis of the behavioral approach is on quantitative, achievement-oriented data; social effects of

a program are not considered, e.g., the model lacks sensitivity to political or social issues.

The AIR report—*The Evaluation of the Impact of the ESEA Title VII Spanish/English Bilingual Education Programs* (Danoff, 1978)—represents a classic example of problems that may develop when a traditional behavioral objectives design is used to evaluate a social change program. The evaluation was conducted by the American Institutes for Research (AIR), a firm in Palo Alto, California. Initiated in 1975 and mandated for completion by November 30, 1977, the study was designed to include bilingual education programs for Spanish-speaking, Native-American, Indo-European, Asian and Pacific language groups. Exemplary programs were identified. The study involved thirty-eight projects in eleven states and tested a total of 7,700 students, all ranging from second to sixth grades.

Following a precedent set by previous federal evaluations, the AIR evaluation was based on a behavioral objectives evaluation design. In this case, the behavioral objectives design dictated use of certain procedures and assumptions that were simply not appropriate for bilingual programs. Specific difficulties encountered were:

1. The design relied heavily on the control group approach. Problems arose when no control group was available—as in Montana or Idaho, for example. A close reading of the report reveals that control groups are either missing or are made up of inappropriate subjects.
2. Achievement tests used were standardized tests in English and in Spanish. Both presented problems of cultural irrelevancy and bias. The English test was normed for use with Anglo-Saxon, white, middle-class children and the Spanish test was an unaltered version of a Puerto Rican test that had been originally developed for use with Puerto Rican children on the island of Puerto Rico.
3. Each subject (child) was tested twice within a five month period. It was expected that a behavioral change would have occurred within this short period of time. This notion of pre-post testing is built into the design of the behavioral objectives evaluation model and has traditionally been used in educational achievement testing. In cross-cultural educational research, however, there exists little information that might validate any expectation of change in this or any other time period.
4. Throughout the evaluation AIR wrongly assumed consensus of goals and objectives of all nation-wide bilingual programs. This led to the collection of what appeared to be a great deal of contradictory data with respect to program aims, and ultimately contributed heavily to AIR's inability to identify a good program versus a bad one (Gray, 1978).

Ultimately, the findings of the AIR report suggested that bilingual programs do not appear to have a significant impact on student achievement. In reference to the report, Gray states:

> One is unable to decide to what extent the inadequacies of bilingual education are an artifact of measurement error, evidence in inherent limitations in production possibilities, a result of implementation problems, the result of slippage between treatment and goals, or the product

> of premature assessment. In short, the study does not permit us to generalize from the past experience with Title VII or even to specify the nature of the problems in theoretically fruitful terms (Gray, 1978).

The AIR study avoids the reality that bilingual programs develop and exist in districts that differ markedly in terms of variability of linguistic needs, demographics, availability of well-trained teachers, adequate curricula, district commitment, and level of politicization of communities. As a result of this, the report fails to distinguish the effects of good projects and weak projects and treats bilingual programs as an undifferentiated uniform whole.

One might speculate that some of the major problems that the evaluation encountered, either in its operational stages or at the time of data interpretation, might have been avoided if a more flexible design had been utilized. In the history of evaluation the AIR study will remain an affirmation of an observation on the state of the art made by Cohen in 1973:

> . . . while new programs seek to bring about political and social change, evaluators generally approach them as though they were *standard* efforts to produce change (Cohen, 1973).

If indeed, as Stufflebeam (1968) claims, the "aim of evaluation is truly to provide information for better decision making at all levels of education," it would seem that one of the primary concerns would be that the evaluation audience be given a valid picture of what goes on in the program. Sound decisions cannot be made using inappropriate or distorted data. Evaluation models based on the utilitarian concept of justice have not proven empirically appropriate for use with social action programs such as bilingual education, e.g., AIR. The utilitarian tendency to ask, "Which bilingual education program will best serve all Spanish-speaking children in the U.S.?" arises out of the assumption that society can and should measure the maximum satisfaction or the "one-best" bilingual education program as proven empirically through test scores. In view of the limitations of the behavioral objective model in evaluating bilingual education programs, one might speculate whether the federal or state governments, i.e., the evaluation audience, have *ever* received a realistic or valid portrayal of such programs. The vast majority of evaluations conducted of bilingual education programs are "worthless" according to Troike (1978). Indeed, according to Zappert and Cruz (1977), 97 percent of the evaluation and research studies they surveyed were of little help in better understanding this type of program. Apple's (1979) comment on current evaluation shortcomings may well have been directed at bilingual education. He states that:

1. A great many of our evaluation efforts are often misguided because they see schools as discrete institutions isolated from social and economic forces, ideologies, and values.
2. Given the input/output methodologies we usually employ and the aforementioned lack of socioeconomic sophistication, we shall continue having a good deal of difficulty understanding how and why students actually respond to these efforts (Apple, 1979, p. 1).

It is difficult to reconcile the fact that most evaluations of bilingual education programs have been based on utilitarian ethics. It would appear that these evaluations have been neither true nor just. At this time it is difficult to determine if bilingual education has benefited in any respect from this type of evaluation.

House (1976) has observed that the persistent use of traditional evaluation models stems from the fact that utilitarianism most closely reflects official government philosophy. However, political legitimization and sanction of a philosophy does not, in the case of bilingual education, preclude a just evaluation. Justice for most people does not necessarily represent any singular principle, but rather is comprised of a heterogeneity of principles applied intuitively from situation to situation. Judgment and interpretations regarding justice are thus based on a combination of intuition and past experience.

This type of intuitive judgment about programs is what Stake (1975) views as an appropriate tool in evaluating programs. The authors of this paper would like to suggest that utilizing the Stake (1975) responsive approach may be helpful in evaluating bilingual education programs. The aim of this approach is to facilitate and improve audience understanding of the program. This is achieved by communicating to the audience as complete a portrayal as possible of the program as it is perceived by those persons most involved and most affected. Stake (1975, p. 5) states that, "if we are to help them (the evaluation audience) understand social problems and social programs, we must perceive and communicate in a way that accommodates their present understanding."

The flexibility and the versatility of the philosophies and procedures of this model contrast markedly with the strict utilitarian model. The intuitionist/pluralist model attempts to arrive at understanding rather than at providing explanation or validation of prespecified theories. Stake describes his model as follows:

1. It orients more directly to program activities than program interest,
2. it responds to audience requirements for information, and
3. the different value-perspectives are referred to in reporting the success and failure of the program (Stake, 1975, p. 8).

According to Stake (1975), case studies stress the complex, holistic, and multiple variables that affect the programs. A case study for example, would be sensitive to the socioeconomic goals of the bilingual education programs as well as the academic goals. Methods of data collection utilized in this approach differ emphatically from those employed in the behavioral objectives model. In the traditional approach data are collected through the use of standardized test measures; the responsive model, however, gathers data chiefly through interviewing, observations, questionnaires and surveys. The exact purpose of the responsive evaluation is negotiated with the evaluation audience. Stake describes the evaluation of a program as follows:

> To do a responsive evaluation, the evaluator conceives of a plan of observations and negotiations. He arranges for various persons to observe the program, and with their help prepares brief narratives, portrayals, product displays, graphs, etc. He finds out what is of value to his audience, and gathers expressions of worth from various individuals whose points of view differ. Of course he checks the quality of his records, he gets program personnel to react to the accuracy of his portrayals; and audience members to the relevance of his findings (Stake, 1975a, p. 14).

While the traditional approach dictates presentation of quantified data in formal written reports, the presentation of the responsive evaluation might assume a variety of forms, e.g., written reports, simulated program interactions, films, taped activities, etc. The aim of the presentation is to increase audience understanding of what is really going on in the program. It should be made clear that Stake (1975) expands the definition of "audience" to include all persons who have an interest in the program being evaluated.

In the responsive evaluation, the evaluator is most interested in observing the program, gathering judgments, and learning the critical issues and concerns about the program from those most involved. The evaluator gathers information through more naturalistic processes, and generally attempts to learn about a program through his/her close association with it. The intent is to describe one relatively discrete situation rather than to numerically analyze the aggregate of situations. The emphasis is on the development of a rich, meaningful description that will give the reader a vicarious understanding of the program. In the following table Stake illustrates the difference in time devoted to evaluative activities by traditional and responsive evaluators:

EVALUATOR ACTIVITIES*

	Preordinate	*Responsive*
Identifying issues, goals	10%	10%
Preparing instruments	30%	15%
Observing the program	5%	30%
Administering tests, etc.	10%	–
Gathering judgments	–	15%
Learning client needs, etc.	–	5%
Processing formal data	25%	5%
Preparing informal reports	–	10%
Preparing formal reports	20%	10%

(Stake, 1975, p. 13)

*Stake, R.E. "Program Evaluation Particularly Responsive Evaluation" *Occasional Paper* #5. Kalamazoo, MI: Western Michigan University, November, 1975.

The breakdown of the time devoted to the various activities demonstrates that the responsive evaluator places an emphasis on getting to know the program and then relating his perception in a meaningful manner to the audience. It is hoped that by engaging in these types of activities, the responsive evaluator will learn both the favorable as well as the unfavorable aspects of the program.

Because of his close association with the program, the evaluator has the advantage of being able to inspect the fit between his/her description of the program and the actual program itself. In addition, he is able to obtain feedback from the varied audiences as they compare the evaluation findings with their own experience with the program (House, 1977). House perceives the audience's role in evaluation as that of validating the evaluation data, and of assuming an active role in interpretation of findings. Thus, the evaluator does not produce a single judgment of a program; rather the audience variably interprets the evaluation from his/her own values and perceptions.

Since all significant viewpoints have the opportunity to be expressed in the evaluation, the evaluation is not inherently biased toward any one group.

As it was pointed out earlier in this paper, the utilitarian approach, e.g., the traditional approach, does not permit portrayal of opinion by different groups. However, the intuitionist/pluralist approach (such as the Stake model) gives voice to the opinions of different groups concerning the worth of the program. In using Stake's model, evaluation findings will *not* be worthless. Rather the evaluative findings will have an effect because they will have been collected and validated for a particular audience. Since an evaluator collects data that are critical for his/her particular audience, the data will be useful in making decisions about the program. With the inclusion of responsive descriptions within the intuitionist/pluralist framework, decisions concerning bilingual education programs will be more likely to contribute to program effectiveness. Decision making will not rely on a monolithic data base produced by utilitarian traditional evaluations, but rather will rely on data that reflect the perceptions of those persons most affected by bilingual education.

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ED212159

FL 012 765

CONTEXT-SENSITIVE EVALUATION TECHNOLOGY IN BILINGUAL EDUCATION*

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EVALUATION IN NON-STANDARDIZED CONTEXTS

In the late 1970s and early 1980s there was a proliferation of innovations in organization structures and processes. These changes rolled across corporations, nonprofit organizations, and educational institutions. They reverberated in patterns of music, dress and social interaction, across class, sex and ethnic boundaries.

These broad and powerful changes constituted a tidal wave against which we attempt to evaluate innovations in educational practice. When people at every level of our social life are experimenting with new sex roles, new ethnic and class communication patterns, it is useful to inquire if bilingual education is part of a broader sociocultural change process that has brought Japanese-implemented quality control circles into General Motors and U. S. Steel, has inspired workshops on sexual harassment in thousands of educational and corporate enterprises, and enormously increased employee expectations, student and parent participation, along with a host of administrative changes and a variety of factors operating in the evaluation setting.

Whether or not one considers bilingual education as another instance of this proliferating variety, the assumption of this paper is that the bilingual programs themselves are operating in institutional settings with great variation in philosophy, resources, organization and constituents. For example, in constituency alone these programs must respond to students, parents, political groups, teachers and aides with different goals derived from sometimes complementary and often contradictory class and cultural perspectives.

This variety is especially significant for the paradigm underlying the evaluation process. A standardized questionnaire administered under controlled conditions to carefully selected samples makes fewer assumptions about the essential equivalence of the setting context than, for example, an SAT or an I.Q. test. But all make the assumption that the standardized stimuli will assess participants who will perceive the stimuli similarly, relate the evaluator's categories to common objectives being attained through agreed upon means with similar implications for the respondents.

What are the implications for evaluation of enormous contextual variety? One implication is that instruments that ignore disagreements in programs about goals and means (objectives, curricula and instructional techniques)

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will force responses in categories that respondents do not necessarily regard as significant. That is, respondents may dutifully rate on a scale from one to ten the efficiency or effectiveness of a program on some evaluator-chosen dimension, while cursing "these idiotic questionnaires" under their breath.

Instruments that work well in settings where conflict is a technical disagreement over efficiency in reaching agreed-upon goals, means, and measurement of success, may not be appropriate for settings where conflict rages over questions of the program's existence, goals, means and measurement of success. Indeed, many of us can probably recount programs in which the proclaimed goals of the organization were merely pro forma compromises for the sake of funding, gaining temporary assent of a powerful political group or idealistic aspirations. Educators can recall funded proposals with goals and activities perceived to be irrelevant to the day-to-day practice and problems of the staff implementing that program.

Thus, another implication for evaluation is that programs that are ostensibly interchangeable implementations of a common legislative intent, district strategy, or statewide effort, are in practice entirely different creatures with different environments, problems and resouces. Most importantly, they are radically different in their self-perception of what works and does not work in their implementation. Under these circumstances, a major advantage and disadvantage of formative evaluation is to clarify which perceptions of goals and means the staff have in common and which they do not. Greater clarity, of course, may not lead to greater cooperation; sometimes more understanding may make the conflict worse. (This possibility is wisely considered with one's client in advance of the evaluation.)

"The Way is not the true way."

The Tao

THE SIMS IMAGE-BASED ORGANIZATIONAL MODEL (SIBOM)

A context-sensitive approach cannot be rigidly tied to an instrument repeated as carefully as possible in setting after setting with minimum variation. Context-sensitive evaluation must include both standardization for the sake of comparability, and many opportunities for the variance of the setting to register. Such an approach must provide a specific type of qualitative data, information that answers the question, What is the significance of the experience these participants have in their program? Our objective is to provide feedback on their perceptions, their interactive process and their organization with respect to their environment so that they can assess their problems and resources.

These evaluation results can become a new step in organizational development and problem-solving. The need for standardization for comparability and the need to be open to the influence of the setting and participant perception requires multiple approaches to the data in combination with a systematic projective measure.

This paper focuses on a particular technique for eliciting participant perceptions, a technique that is just one element in the model for evaluating a program. With this technique we seek to understand the ecology of the program, the system of the participant-in-organization. The data obtained with this technique yields an evaluation that stresses different aspects of a program depending on what themes are reinforced in the setting. While provocative questions may stimulate interesting projective responses and discussants may volunteer analyses of their metaphors that reveal unsuspected variables in their setting, we are primarily concerned with how the system as a whole fits together. The content produced by participants, the process by which they interact with each other and the context in which these events occur together determine the significance of a particular theme in the organization.

Qualitative Data as an Attempt at "Meaningful" Evaluation

One of the difficulties of standardized, "objectively administered" instruments is the puzzlement of the participants when the data is fed back. "What," they ask, "does this lower achievement of the fourth graders in section B really mean about our program?" The problem of determining real meaning from information such as: "A majority responded with selection X in evaluating this program," is a problem of translating from X back to the everyday categories in which the program operates in the minds of its participants. To them, anything else is unreal. The reason a problem exists at all is traceable to the attempt in gathering quantitative data to reduce the idiosyncracies of the moment in favor of standardized scales or dimensions. Beyond the problem of forcing responses into an inappropriate mold (See Patton; 1980, 66-67), this creates the problem of how the standardized comparative results become translated back into the idiosyncratic perceptions of those who have been statistically lumped together.

In confronting the problem of generating useful results to the practitioner, the manager of a firm, an administrator of a program or a teacher in an educational setting, we confront the problem of how to collect idiosyncratic data in a useful way that takes less time than a standard ethnography and can be used in a form readily understandable to the participants. What we want is a method of collecting the perceptions revealing the system of relationships among the participants and between the participants as an organized collectivity and their (its) environment. It is the systematic nature of the evaluation that allows for comparability among participants and allows for the intrusion of environmental factors. We want not only idiosyncratic perceptions, but also a means of organizing these perceptions that describe the system of problems and resources that the participants perceive in their environment. On the way to this structured discovery, observations provide data on their style and their manner of interacting with each other through their discussion of their responses. When they finish the evaluation they should be able to describe not only their perceptions but also areas of agreement and disagreement, problem and resource areas and, sometimes, how their own process strengthens or weakens achievement of their objectives.

Assumptions of SIBOM

1. Participants do not necessarily share a common understanding of their experience. Furthermore, an evaluator will only in the rarest of cases

select dimensions that participants themselves would use to describe their experience.

2. Participants have a great deal of useful information that is not consciously organized. Much of the potential usefulness of this information is likely to be underplayed by the participants who have neither the time nor inclination to pursue the connections among different relationships in their organization, their behavior, their problems and their resources. The utility of this information is further reduced by its right-brained, holistic nature. It is very difficult to retrieve intuitive insights in response to direct, problem-focused questions, even if they are of an open-ended construction. Participants are much more likely to have an "Ah, Ha!" experience in a play-oriented setting than in a serious, "answer-this-question" format. While we cannot provide each participant a hot tub and a relaxed away-from-it-all setting, we can improve upon the format "tell me what you like/don't like about X in the four by five space that follows."
3. Finally, some of the participants' potentially useful information is organized under categories that either do not fit standard evaluation dimensions, are deemed irrelevant by either their culture or by the evaluator's culture or are simply not defined as problems. Thus, when asked to freely comment upon their program, participants may not supply significant data about their setting for, to them,some very good reasons. The best reason of all, of course, is that some obvious feature of the environment is so familiar to them that they think it is known to everyone. Thus a program that perceived itself as a dumping ground for everyone else's problems might simply neglect all the perceptions they have of this situation under the assumption that this is one of the organizational "givens." They might also neglect to consider the many ways these perceptions are transmitted to their clients or students.

INITIAL VISIT AND DATA GATHERING

This visit to the site to arrange the metaphor-generating session is much more than a courtesy call. The first face-to-face contact with the staff and the first introduction to the setting is an invaluable opportunity to gather information that may be of enormous value in later analyses of the metaphors.*

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*Contextual evaluation entails an inevitable tension between "subjective" and "objective" elements. In order to understand the necessity for this tension and the necessity for choice in reconciling alternatives, it is helpful to understand contextual evaluation and qualitative evaluation as a pattern recognition process (Bongard; 1970). All pattern recognition processes involve matching between some perceived stimuli and a subjectively generated law, rule or an ordered set. Evaluators using the processes discussed in this paper will be seeking to generate a rule that "explains" regularities in the field. They seek to weave a tapestry that is similar to that which would be woven by others using threads perceived to be different in hue and shade but similar enough in pattern to be recognized as coordinated with each other.

There is an undeniable element of choice in the organization and presentation of

There are as many different ways of gathering data in the initial visit as there are evaluators. This enterprise can vary from the exhaustively conscious and cognitively-directed survey to the heightened awareness, not-consciously-directed observation. For the beginner it is useful to experiment with different approaches. For data on the setting, an ethnographic check list can be helpful; for data on interaction, any of the sources on nonverbal interaction, language and scripts or interview data are useful. There are risks at either end of the continuum. One can become so bogged down in the details of mechanically filling in items on a checklist that one loses all perspective on the systemic nature of the setting. Opposite dangers arise from becoming so impressed by certain features of the setting, e.g., a powerful or charming director, that one overlooks details that point in a contrary direction to the public relations campaign.**

Whatever one's personal style, there are certain areas worth considering in any visit such as the density of the setting, the abundance or lack of resources, presence or, especially, absence of identifying symbols of the program or group one is evaluating. In this effort we are attempting to assess the significance of the organizational context, the setting, style of interaction, residue from previous events (history), self-perception, and expectations of the future. Sometimes there are one or two events that have had such an overwhelming effect upon the participants that they volunteer their own metaphors. For example, a funding cutback in one program striving to achieve legitimacy in its institutional setting, had participants' nodding agreement while one of them described their program as an orphan awaiting execution in a year. These spontaneous, self-descriptive metaphors will

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data. As the Gestalt psychologists have shown, figure and ground are subjectively organized even with visual perceptions, not to mention the less verifiable units and other culturally influenced modes of reacting to social information. Likewise, there are independently verifiable events, statements of participants, shared beliefs, economic factors, physical settings, etc., which participants take into account, magnify or ignore. The evaluator must confront the tension between what she selects to be important, what participants indicate to be important and the explanatory value of these constructs for understanding an organization.

An additional difficulty is that this contextual information, especially information from participants on organizational functioning, is *not* an Aristotelian category in which *A* mutually excludes *B* (Gunther; 1962). Even as participants are assessing their organization, their assessments will be changing—an outcome accelerated by feedback from others on their metaphors, judgments of efficacy and efficiency and movement towards consensus or divergence in dissensus. The evaluation is similar to the Heisenberg effect in that the more information and energy used to link formerly isolated participant cognitions, the more the system will likely change from the initial state. Thus not only must the evaluation confront the choice of which set of occurrences deserve emphasis as constituting the main patterns but it must also recognize the extent to which involvement in the evaluation process becomes organizational development.

**As part of impression management we assume all programs will attempt to manufacture certain perceptions in the mind of the evaluator and to a greater or lesser extent attempt to influence the final outcome. These procedures can range from generous hospitality to attempts to stack the sample of respondents.

often be produced as participants relate crucial events in their program's history (Wilkins; 1978). They are valuable hints on the nature of the script, an underlying perception together with an organized behavior repeating similar problems throughout the program's functioning. Sometimes these scripts and decision-making styles will be revealed through experiential descriptions such as "we are always fighting fires," or "we just keep right on growing and growing" (Berne; 1972, Steiner; 1976).

These initial conversations should be used not just to gather content information but also to sensitize the evaluator to the participants' quality of life and their experience in their program. In a more technical sense, what we are seeking is the method by which the participants structure their social order and maintain it (Psathas; 1980, Berger & Luckman; 1960, Holzner; 1968). The metaphor-generating process will be an additional tool for allowing members to describe resources and problems they perceive in their environment; however, the evaluator's understanding of these metaphors will be greatly enhanced to the extent that the evaluator sensitizes her awareness of the operating environment and the self-descriptors of the program.

The Janus nature of the initial visit lies in its looking to the present process (including participant selected perceptions of their history) in order to peer into the organizational future. Our theoretical position is that social reality is an arbitrary construction; the present process will determine the kinds of social communication and the perceived problems and resources the organization has in the future. Our initial visit looks for clues informing us of the process these participants use to organize and make sense of their social environment. We assume some continuity between the kind of post-hoc explanations that a group offered in the past, is offering in the present and will offer in the future. A program that describes itself as a "dumping ground for others' problems" has different processes for scheduling demands on its resources, making decisions about priorities and reacting to events as compared to a program that describes itself as the equivalent of a "self-made man." These organizational myths are often after-the-fact explanations of events rather than guiding ideology for events in process; nonetheless, the types of stories participants tell about their organization will help the sensitive evaluator to guide discussion of the metaphors they will generate in the next stage of inquiry.*

THE USE OF METAPHOR—WHAT IS A YELLOW RIBBON ANYWAY?

Is a yellow ribbon a sign of cowardice? A symbol of renewal and revitalization? A secular symbol? A religious symbol? If thousands of them are placed in a few days around trees and poles throughout a nation, what does this mean?

Metaphor has been used as part of oral culture for centuries. It can function as a teaching tool and, as David McClelland (1961) illustrated, stories can teach a great deal more than their surface content might otherwise imply. Metaphor can also be a way of legitimizing particular roles, explaining by analogy, the contradictions and confusions of recent events. Thus metaphor can selectively emphasize continuity between the past and the present and maintain the social order. As a right-brained activity, synthesizing, sometimes with "hidden" meanings, ambiguous roles, and disparate events, the same metaphor can be used to appeal to different social groups—teaching them their proper place, appropriate behavior in what might otherwise be an ambiguous or stressful situation. But if a metaphor can be used to maintain and control perceptions of events, it also could be used to change perceptions and, thereby, social roles and behaviors.

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*For a good discussion of the post-hoc nature of social explanation see Garfinkle (1967). For a very good illustration of how to use organizational stories to investigate organizational climate and management behavior see Wilkins (1978).

As more experience is gained in the use of metaphor, we learn not only of its diagnostic or evaluative potential, but also of its potential for accelerating change. As revolutionaries have demonstrated, displacement of the old myth with one legitimizing new self-concepts can release powerful social forces (Wallace: 1956).

The Metaphor in SIBOM

SIBOM's use of metaphor takes advantage of : (1) the metaphor's projective properties, (2) its synthesizing function (3) its generality, i.e., its remoteness from specific problems. Each of these properties enables participants to discuss their context with greater freedom than they would under direct questioning. To these properties of metaphor we add the advantage of directed questions to guide participants to areas of interest such as relationships between organization and environment, between self and environment, decision processes, communication process, problems and resources.

As a projective technique, asking participants to think of an animal (or other symbol) that resembles their project is a sufficiently ambiguous request to require a search of their experience for a significant analog. Given the thousands of species to select from, participants seek to structure their search around their experience in their terms—within the context of their program as they know it. This certainly avoids the problem of eliciting responses to evaluator categories that are incongruent with the respondent's world view. It does not necessarily avoid attempts to supply responses that participants think the evaluator wants to or should want to hear. Cross-participant discussion of responses can help with this problem at a later stage.

As a synthesizing function a metaphor may have its most powerful effect in pulling together information for respondents, which they recall as isolated units not normally linked in their thinking. A metaphor's ability to compress a great deal of peripheral, intuitive and emotional content into one symbol can enable a participant to display concerns in a symbolic form that can be discussed and analyzed afterwards. A respondent might not be able to work this process in reverse. (At least some respondents report that it is much easier to generate a symbol that transmits a great deal of information, than to take bits and pieces and build up a collage into a unified symbol. Speculation about this difficulty is probably worth pursuing although of unknown value as of this writing.)

The generality of a metaphor reinforces the value of the synthesizing function by allowing participants to communicate in areas where they otherwise might feel inhibited. As a by-product, problem-solving by analogy is a safe context for identifying general concerns that would otherwise require either acknowledgement of one's personal contribution to maintaining a problem or questioning the behavior of high status individuals in the group. For example, five independent programs that were formally identical but located in different institutions, were visited on different dates with no communication among groups between the visits. These groups produced metaphors by three project directors as a chameleon and two as a rhinoceros. The three were reported by third parties to be quite successful in reaching their objectives; two were reported to have achieved their objectives with an involved minority of the target population while being the center of a great deal of conflict and controversy. The strategies for achieving program objectives described by the metaphor generators were appropriate to popular images of the two animals. On the face of it, a program director might be much more inclined to identify the program as a rhinoceros than to state, "I decided upon my objectives and determined that I had sufficient resources to simply overrun any obstacles in my path."

The generality of a metaphor also facilitates consideration of highly emotional issues. The tendency in organizational meetings is to avoid difficult and ill-defined concerns especially if they are "emotional" rather than "rational" issues. Part of this avoidance comes paradoxically from efforts to produce more efficient meetings. There is an implicit trend in the left-brain oriented meeting to emphasize output. Participants arrive with their minds cluttered with short-term problems they worked on in the office around the corner. Filled with day-to-day or hour-by-hour problems they confront a preset agenda for a defined time period. If several "sensitive" issues have been unsuccessfully raised in past meetings, the organizational culture stigmatizes certain topics as a "waste of time." Under these conditions who wants to risk thrashing around ambiguous concerns which are not thoroughly thought through and are not on the formal agenda? Over time, certain long run problems will be ignored by the organization. Particularly susceptible are those issues which affect the internal balance of power, are a danger to the current budget of an agency having the concern, or that contradict organizational assumptions about its environment which, on the surface, seem to be working. By combining the power of metaphor, analogical thinking and organization-environment exploration, SIBOM enables the confrontation of issues which would normally be suppressed.

One result of redundant communication with a general analogy is that the participant may discover meanings or associations that were previously unsuspected. The fact that organizations and their environments are systematically related can be turned to an advantage in the evaluation by deliberately designing probes of different relationships in the participant metaphors. How this is done depends on the focus of the evaluation, the clues provided in initial entry, the manner in which participants are responding to questions during the metaphor generation process and other assessments. For example, if the objective of the evaluation is to assess the extent to which participants are achieving their personal goals in the program, a series of questions can be directed at qualities of the program metaphor as compared with qualities of a self-metaphor. Thus, given a program fantasized as one type of animal and the self as another, the participant can be asked to generate characteristics of each animal, to describe problems and opportunities each sees in their relationship and to have a dialog between the two metaphorical animals discussing changes desired in their relationship and discussing what each would give up in order to achieve these changes.

If the objective of the evaluation is to assess the organizational level, i.e., relationship between this program and the larger organization or the local environment, specific questions can explore metaphors of environmental features, qualities of the ecology, e.g. supportive-hostile, rich-lean, dense-isolated or other dimensions that participants generate. (Generally we avoid suggesting dimensions to the participants but ask them to describe qualities of the environment in which their program animal survives and grows, problems and resources available in this process.)

It is possible to explore several different levels of interaction in the same evaluation. The more levels are added, the more cognitively complex is the metaphor and the longer the process takes. How this trade-off between the benefits of a wider range versus the cost in complexity and time is resolved depends on the skills of the participants, their stake and interest in the outcome, the group leadership skills of the evaluator and the environmental press. Where the evaluation is part of an organizational development and problem-solving workshop, portions of the metaphor can be utilized as introductions to different sessions such as team-building, problem-solving and design of action plans. With students evaluating their school program, a one and a half to two hour session focusing on one level seems to work best.

Selecting the Evaluation Group

Although the metaphor-generating group can be of any size, intensive discussion of the metaphors should be conducted with a group of about five or six persons—depending on the verbal skills of the participants and the amount of time available. The selection process should avoid any known biases in the population, e.g., selecting all new personnel or new students or omitting certain ethnic groups. Ideally a stratified random sample is desirable; however, as a practical matter, for an evaluator operating in an unfamiliar setting for a short time period, it is not very difficult for some of the randomly selected participants to be selected out by personnel who inform the evaluator that the selectees are absent or otherwise unavailable.

The result of a stacking attempt is often paradoxically perverse. If the program succeeds in seeding the group with one or two distinctly deviant advocates, their positive responses in the group will fail to be supported by others while general agreement on negative factors in the program may receive even the advocates' support. The result is that genuine positive trends in the program may be discounted or may not be mentioned in the discussion at all. Responding to this situation by asking for behaviors or recent examples of positive features of the program will often disclose perceptions that were muted in a general negative trend (the reverse is also true).

From the systems perspective we are not surprised that the same process can be the source of both positive and negative evaluations of the program. The adage, "A chain is as strong as its weakest link," might be stated as "A system is likely to have its greatest influence and most pernicious effect in the same subsystem." For example, a program criticized for being unsupportive of students, lacking direction and ignoring student viewpoints was also praised for being open-ended in achievement, encouraging independence and preparing students well for their occupational environments. The same staff behaviors contributed to both assessments. The staff would assign complex tasks without detailed explanations and expect students to accomplish them. New students would find this practice very disconcerting, experienced students found ways of getting answers to problems in the task. Over time, students who survived learned both how to deal with frustration and how to solve problems on their own. Obviously, stacking the evaluation with a preponderance of either new or experienced students would mute the counter-theme. An evaluator who consistently asks what are the defects of this alleged virtue or, contrarily, what are the virtures of the process producing these alleged complaints, not only can compensate for imbalance in the selection process but also can considerably improve the power of the feedback.

The Metaphor Generating Process

The intention in SIBOM is to invite the participants to generate an analogy to their program and its functioning. By combining the ambiguity of one stimulus with a set of questions sampling general system properties of their analogy, participants can develop a framework for discovering and solving their problems (See Gordon: 1961, Prince: 1970).

The first task in devising questions for the guided fantasy is to decide the level at which one wishes to set the primary focus. This is usually a choice between the participant/organization interaction system and the organization/environment system. Setting a clear boundary to the system is very important in the initial introduction. Initial interviews will have clarified the areas for evaluation and the appropriate systems prior to the metaphor-generating process. One can then structure the next stage by asking participants questions about the boundary of the system at interest, for example: Who is included in the Cosmological Education Program? How are Cosmological initiates selected? What is special about the Heavenly Ideals Cosmology Program? At this point one can either focus on the program/institution relationship or on the participant/program relationship. One can introduce the metaphor generating process by: We will be asking you to think about this program and how it relates to ________________ (The University of Profound Understanding, the Department of Righteous Criticism, the Community of Concerned Scholars, The Universal Funding Source etc.) Alternately, the process can be introduced by: We will be asking you to think about your relationship to your program: how you thought you might benefit from it and what your experience has been since entry.

Appendix I lists different questions that might be used to build an analogy from student metaphors. These questions are a mixture from which one can sample either level of interest and generate questions better suited to one's client. It is possible to sample more than one level of analogy: however, for the majority of participants, strict segregation of levels in the process, asking all the personal/program questions in one section and all the program/environment questions in another section will prevent enormous confusion. As we note below, these questions would be repeated in different sense modalities for maximum response.

Data Recording

Participants are asked to jot down their key associations during the guided fantasy portion. By retrieving these sheets the evaluator can obtain a useful check on the discussion process. Insofar as participants modify their associations in the general discussion, these departures will contrast with their key associations. Also, while the evaluator waits for some participants to respond, she can look over the associations generated and obtain clues to how difficult the process is for the participants and whether he/she is being clearly understood.

The metaphor-generating process usually can be completed within an hour. If participants are having difficulty with particular instructions, it is sometimes helpful to provide alternative sense modalities for construction of the analogy, utilizing aural, kinesethic and visual modes. For example: How your program animal moves through its environment is kinesthetic; while, how other animals in this environment see this program is visual, and how do they speak about it, is aural. Since it is terribly time-consuming to ask all questions in different sense modalities, we usually provide one neutral question format and then repeat the question with one of the sense modalities, varying the sense base over the questions asked (See Bandler and Grinder; 1979 and Grinder and Bandler; 1976, for discussion of their experience in different formats).

Discussion and Recording

Upon completion of the metaphor-generating process, participants as a group are invited to fill in a matrix headed by: Type of Animal, Characteristics, Environment, Dialog and Changes. Sometimes each member of the group will be asked to write in their analogy in the appropriate category, sometimes this will be recorded while the participants discuss their choice. The alternatives depend on the skills of the group and the amount of time available. The discussion portion of the process has both a data-generating and a data-analysis function. By exploring behavioral referents to the metaphor, e.g., "How is this program environment dangerous?" and probing common group perceptions, data is being generated about specific aspects of program functioning. By way of a handy household hint, evaluators will generally obtain more response by asking, how, what and when questions while avoiding why questions. The latter are more likely to arouse defensiveness in participants who think that the evaluator is questioning the legitimacy of their analogy rather than inquiring about their reasons for their metaphor.

ANALYSIS

There are two major levels of analysis: content and process. The content analysis actually begins with the discussion of the metaphors by the participants. The participants are in the best position to explain what aspect of their experience is recalled by their analogy and the process of clarifying the meaning is likely to stimulate associations and discussion of other related system features by listeners. This discussion can itself be a valuable problem-solving and formative evaluation tool.

The feedback aspects of the metaphor-discussion can be enhanced by asking comparison and contrast questions of the participants. If there are a number of similar animals or animals with similar characteristics selected by the participants, the evaluator can ask about this apparent consensus, or she or he can ask about areas in which participants frequently disagree.

Content Analysis

Content analysis determines the degree of congruence in perceptions of the respondents regarding matters such as age, time in program, sex, ethnic group, type of change desired in the program or objective in program.

Consensus. If participants' independent selections cluster around a few animals or animals of the same family this may be indicative of similar perceptions or congruent experiences in the program. A better support for this inference is if the characteristics ascribed to their selection are also similar, e.g., agreement that this is a fast-moving, jerky animal living in a dangerous environment. This consensus can be analyzed for perceptions of environmental characteristics, types of problems, resources and desired changes. Some of this material should be explored in the discussion group by asking how many agree with certain perceptions or asking for additional examples from those who claim that the program shares certain characteristics. For example,

"This is a loose program." (Student 1)
"In what way?" (Evaluator)
"Well, we joke around a lot." (Student 1)
"Yeah, we don't have to be serious all the time. We can be spastic." (Student 2)
"What does that mean?" (Evaluator)
"Like, as long as we get our work done, we can goof off while we're doing it." (Student 3)

How far one pursues examples and types of "goofing off," "getting the job done" and what detail of questions are asked, will determine the richness of the portrayal of the group's experience in this setting. This approach can become the equivalent of frame analysis if pressed far enough, but usually time constraints will allow sampling of one or two domains in some depth while treating others more briefly. For one approach to the intensive interview process or frame analysis see Canican (1975) and Metzger and Williams (1956).

Relationships. In addition to degree of consensus or dissension among respondents, the evaluator can pursue the quality of relationships either between self and program or between program and environment. Some characteristics of the metaphors themselves are very useful clues to the quality of communication in the relationship. For example, if respondents select an animal for themselves that does not even exist in the same environment as the animal selected for the program (and likewise for program and analogs of its environment), then the respondent is also likely to have difficulty generating a dialogue—even in fantasy—between the two analogs. One respondent selected an octopus to represent the program and a wild horse for himself only to report that he spent ten minutes trying to imagine how the two could communicate—producing an admittedly ineffective result. The group of which he was a member also reported a sense of isolation from their "host" institution and experienced grave difficulties keeping their program "on track." When other participants in this program contributed their analogies, nearly all of them had difficulties fantasizing communication in their metaphors.

This process of identifying participant's difficulty in communication can bring out resources that have not been explored, perceptions that some members thought they alone had, and reinforcers the group has been using to stabilize their relationships.

An additional relationship analysis can be conducted on the nature of the metaphorical animals to each other: prey and predator, host and parasite, leader and follower, etc. These dimensions can be explored for factors contributing to greater or lesser communication, competition, cooperation, isolation, integration or other relationship qualities.

Changes in the program. Participants can be stimulated to generate very useful analogs to their situation and desired changes by structuring a dialogue between their metaphor for the program and their metaphor for themselves. Although sometimes their perception of the program is so different from themselves or they create such radically different environments that communication is difficult for them to imagine, as we discussed previously. Usually with animal analogies this is less of a problem than with analogs from other domains. The domain is not itself a problem but merely a tool for allowing the underlying perception to be communicated. By way of illustration, Gestalt psychotherapists and psychodrama specialists have a great deal of success in stimulating dialogues between conflicting "parts" of their clients by having them "become" objects in the room, take the role of parts in their dream, alternate between different chairs and project themselves into a wide variety of situations. While we in this part of the paper are primarily concerned with content analysis, it should be borne in mind that the particular question or technique that generates the content is merely a convenience. Likewise the result has a meaning only within the system of which it is a part. The Way is not the true way.

The dialogue can contain much useful information about content. But it is equally useful to attend to the process that the participants manifest in their dialogue. By attending to how the analogs approach each other, how conversation is initiated, changes in perception of self and others, many clues can be gained about the nature of communication and social interaction in this program. Properly these concerns belong to a discussion of process; however, it is easy to be misled into an overemphasis upon the content of the changes proposed by the participants.* The difficulty with accepting these changes at face value, is that any well-established practice has a system of supports and a number of functions not all of which are equally apparent to the participants. Likewise, participants are much more likely to understand those behaviors that others could change than they are to perceive how they contribute to maintaining the behavior to which they object.

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*By way of speculation, this content-oriented bias may adhere to the fundamental structure of the world as depicted in Indo-European languages. English, in particular, is so concrete in its noun emphasis of "person, place or thing," that a content bias would not be a surprising consequence. Whatever the extent of linguistic contribution to overlooking the nuance of process and style, the merging of process into repetitious outcomes such as organizational scripts, much of current evaluation technology is concerned with content outcomes as quantifiable achievements. Style, process and contextual variables are occasionally the subject of investigation but by and large are supposed to be "controlled" by random assignment and various sampling techniques.

The No Change Response. One content response is of particular interest to analysis of program change, that of "no change." Some respondents may report that they are completely satisfied with the program and no changes are desired. In the unlikely event that the millineum has arrived, the evaluator will be able to find enormous congruence among responses and the context to support the participant satisfaction hypothesis. Some actual findings from probes of these responses were that participants felt so isolated that their request for "no changes" was a means to avoid the accentuated helplessness from attempting change and failing. Likewise, respondents may think that communicating what they want is impossible or irrelevant to the staff. A useful procedure is to refer to other aspects of the analog, for example, if the animal portraying the self is isolated in its environment, ask how its social needs, and needs for support are met. The extent of this probing is largely a function of the objective contracted for with the client agency. In a brief evaluation one may only be able to note some of the potential contradictions in responses while in a team-development or problem-solving workshop, one may be able to use the contradictions to explore the process by which some participants maintain isolation and avoid making constructive contributions.

Analysis of Process

The process analysis is the area in which context variables are likely to have their greatest impact. Usually it is helpful to have more than one evaluator working with the metaphor-generating group so that one can lead the content while the other assesses the process. In general the process variables that participants display in the evaluation will replicate in important ways the major program processes. Although the hypothesis that the micro-script of behavior in the evaluation process will resemble the macro-script of program/environment behavior is a largely untested hypothesis—reminiscent of ontogeny recapitulating phlyogeny—enough occurrences have been observed to suggest that it deserves serious exploration.

Close attention to the process of the participants in the evaluation will yield a number of areas for questioning in the discussion phase. For example, a group that attested great importance to the staff's ability to tolerate their "spastic" behavior, tolerated continual asides and joking behavior from one pair who were from time-to-time "hushed" by other members. As another example, a group that reported a great deal of difficulty obtaining follow-through on their meetings, and complained of lack of leadership and time-pressure, was the same group that heard an announcement from their coordinator fifteen minutes into the evaluation process that he would be leaving early because of a conflict in schedules—this after he arrived ten minutes after the session started!

It is difficult to generalize about the process variables that might be important in a new setting. A few areas frequently are suggested: (1) How are the evaluators received? Are they working partners, collaborators in answering questions? Sources of suspicion? Objects for manipulation? (2) How are questions received? Is every question a difficult problem? A matter-of-fact inquiry? A stimulation to further information or a guarded response? (3) How do setting and process interact? Do the participants work in a cramped, cluttered quarter with numerous techniques to avoid getting in each other's way? In an expansive setting with sometimes loud voices and sweeping gestures?

When the task is to evaluate a novel process, a mixture of cultures, a distinctive change in setting or management, the outcomes of the program may depend equally or more-than-equally upon the program's processes that influence relationships and communication efficiency and effectiveness, than upon the content of the program. It is not useful to teach an obsolete content or produce an unwanted product by any process, no matter how desirable. The extremes are not in question. The problem for the context-sensitive evaluator is to assess the relative contribution among processes, participant expectations, quality of program relationships, communication, and problem-solving procedures to program performance. It would be particularly helpful to have a baseline of initial expectations of participants along with their changes in expectations over time as well as the initial goals of the program. Although this information may often be unavailable, except through selective recall and unknown post facto distortion, a context-sensitive measure can gather data for such a baseline in the present upon which to assess future program development.

As more experience is gained in using SIBOM, patterns of analogies and program variables will be found. Some areas that are suitable for this investigation are management, leadership style, group interaction and communication patterns, cultural differences and similarities, and time orientation. Data on these processes are available at several different points in the evaluation.

First of all, the initial interview provides opportunities for observing how staff structure their interactions, how they attempt to influence the evaluator, their degree of confidence in the outcomes of the evaluation and their intentions for using the results. If more information is necessary at this stage, a useful tactic is to ask the staff to predict client or student outcomes: How does the staff think they will be portrayed? The staff's accuracy or inaccuracy and their rationale for their choices can become quite useful as a source of further inference.

A second source of process information is from the behaviors of the participants during the evaluation. What questions do they ask? How kindly, suspiciously, openly etc. do they receive the evaluators? How do they handle ambiguities in the presentation? Fake it? Ask questions of evaluators, ask peers, leave section blank? What is the degree of participation in the discussion? What is the intensity of discussion? How are disagreements or divergent perceptions presented, tolerated, rejected?

A third source of process information is from the metaphors themselves. What processes do the participants describe, act out in fantasy? What difficulties do they report in their analogies? Sometimes it is also useful to ask what difficulties are the analogs avoiding in the reported dialogue. The ways of investigating the dialogue, the analogical problems and resources, are limited only by the creativity of the evaluator and the time available to explore the material. Where reinforcing processes are observed in staff reception of the evaluators, in student peer interaction and in metaphor process as described by the participants, we are inclined to accept the process as representative of the program context without further questioning. Where there are discrepancies, it is often most revealing to think about what aspects of this total system would support the observed discrepancy and what further information would be needed to support the hypothesis. Even if circumstances or funding will not permit an evaluator follow-up on the hypothesis, the question can often be pursued by the participants themselves as part of the formative evaluation follow-up.

EPILOGUE—2001—A METAPHOR

Looking back, we can trace the rise and decline of the SIBOM evaluation fad to those factors contributing to its initial acceptance and the need to institutionalize the procedures that led to its decay. Beginning, like a number of other social innovations, with obscure applications on the West Coast United States, its initial appeal was to California fringe groups who by the late 1970s had become universally satiated with standardized questionnaires, scales and achievement tests.

By the time of SIBOM's first formal publication at the Eastern Michigan University Ethnoperspectives Forum, education evaluations had become so stereotyped and ritualized that some administrators simply mailed in last year's questionnaire responses to the current survey. One enterprising Marin County administrator reputedly started a betting pool with his staff, the winner to be the most accurate predictor of the questions that would appear on the newly appointed evaluation team's survey. In case of a tie on the questions, the tie would be broken by the best predictor of the average means on the scale.

SIBOM's appeal was based upon its ability to facilitate the staff's and others' self-evaluation. Its major drawback is that it lowered the visibility and demonstrated the need for professional evaluators. The decline of SIBOM can be traced to several attempts to remedy the latter defect. In mid-'82 Wadislaw Boguslaw published BOBOM (Boguslaw Ordinal Based Organizational Model). Decrying the lack of standardized stimuli in SIBOM evaluations, he produced a set of stimulus pictures with scalable attributes that could be reliably applied to any program—doing away with "soft" group process data. He later supported this advance by a study of forty graduate student group leaders whose group metaphor outcomes were shown to be a mere accentuation of their biases after their initial field visit. This was succeeded by a demonstration by one of his doctoral students from the Guilliford school that there are 150 cells along four independent factor analytic axis into which the BOBOM outcomes can be situated. (Cf. *Journal of Irreproducible Results*, forthcoming.)

Contrary to Boguslaw's approach was the criticism of Silvia Hightower who demonstrated that the spurious "instant ethnography" of SIBOM was greatly improved by use of HOBOM (Hightower Organismic Based Measure—irreverently known as High Org.). HOBOM combined the data from multiple participant observers administering a projective test and other measures over a six month period to produce a thorough examination of a school culture's themes, administrative style, teacher selection and socialization process and student attitudes.

In late 1985 Frank Obvious reconciled the warring schools by proposing a simple ten question format that summarized respondent orientations on a scale of one to five for each question. The refreshing simplicity of this approach was welcomed by teachers and administrators, dreading the exhaustive projective test sessions, bewildered by discussions or orthogonal rotations and irritated by the presence of all these blasted observers. Obvious, who was teaching at a branch of the State University at Big Gap, Montana prior to the publication of his paper, had been administering his scales for the decade previous and was quite surprised at their reception in Carmel, CA. There, being marooned while Big Gap was snowed in, he first learned how well his scales solved the BOBOM/HOBOM controversies. At that time he first heard of SIBOM as well. (Personal communication. Satellite phone interview from Big Gap.)

As for Sims, he diversifed into real estate and now spends his winters and summers in New Zealand and Switzerland, respectively.

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APPENDIX I

SAMPLE QUESTIONS FOR SIBOM METAPHORS

SIMS IMAGE-BASED ORGANIZATIONAL MODEL (SIBOM)

1. Student perceptions of the program and its characteristics.
    - 1.1. If this program were an animal, what kind of animal would it be? Think about this animal. What qualities does it have that specifically make it like this program? Write down these qualities if it will help you remember them later.
    - 1.2. Now imagine becoming this animal. What kind of world do you live in? What is your environment like to you?
    - 1.3. What qualities, what characteristics do you need to survive in this environment if you are this animal? What qualities does this animal need to succeed?
    - 1.4. What are the best qualities of this animal? What are the worst?
2. Student self-perceptions
    - 2.1. If you were an animal, what kind of animal would you be?
    - 2.2. What is your animal like? What are its characteristics? What do you need to do to survive, what does this animal need to do to succeed?
    - 2.3. What is this animal's world like? What does it need from its environment? What problems does it have? What resources? Does this animal live in more than one environment? What are the differences? Has the environment changed for the animal in the last year? In what ways?
    - 2.4. What are the best qualities of this animal? The worst?
3. Student Program Relationships
    - 3.1. Think of the first program animal again and imagine that this animal and your animal meet somewhere. What would they think about each other? What would they say to each other?
    - 3.2. What problems are they likely to have in getting along? What resources do they have for solving these problems?
    - 3.3. Are there other kinds of animals in their environment? What kinds are they? What do these others think about the program animal and about your animal?

4. Student expectations, wishes
    4.1. If you had the power to change anything you wanted about either your animal or the program animal, what would you change?
    4.2. How could you get the animal to make this change?
    4.3. Imagine that the change that you wanted was made, what else would be different? How would you act differently?

APPENDIX II
DISCUSSION MATRIX

	Type of Animal	Characteristics	Environment	Dialogue	Changes
Program					
S_1					
S_2					
•					
•					
S_n					
Self					
S_1					
S_2					
•					
•					
•					
S_n					

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FACTORIAL AND NATURALISTIC OBSERVATIONAL PROCEDURES IN AN EVALUATION OF PRESCHOOL BILINGUAL CURRICULUM MODELS

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Past efforts in the evaluation of bilingual education programs have largely relied on the use of pre-post evaluation designs employing standardized tests administered to treatment and comparison groups at the beginning and the end of a school year. Although this approach has been used frequently, the pre-post design by itself provides no basis for reliably assessing the qualitative aspects of the treatment and comparison conditions such as staff education and teaching skills, the appropriateness of the curriculum approaches, the extent to which bilingual teaching and curricula are actually implemented, and administrative and community receptivity and support. As Cummins (1977) has pointed out, education evaluations that ignore classroom interactions and instead aggregate data from different types of programs having different objectives, operating under different sociocultural conditions, and serving children with varying levels of first and second language abilities, are not likely to be interpretable. Unless empirical and reliable measures of the independent variable are taken into account, it is difficult to achieve an understanding of how bilingual education affects children or to identify interventions that would promote specific outcomes for bilingual children (Cohen and Laosa, 1976; Center for Applied Linguistics, 1977; Intercultural Development Research Associates, 1977; Paulston, 1977).

The selection of standardized tests for use as dependent variables, also has introduced limitations in the interpretation of bilingual education evaluation data. These limitations are largely inherent in the statistical properties of the instruments, i.e., in their reliability and validity. This situation is further compounded when the tests are administered to populations that are culturally or linguistically different from those populations for which the tests were normed. The continued evaluation of bilingual programs requires evaluation approaches that reliably assess qualitative aspects of both the independent and dependent variables. A guiding concern is the improvement of precision in defining the properties of the independent and dependent variables. This paper sets forth an evaluation model developed for a national evaluation of Spanish-English pre-school curriculum models that attempts to meet these concerns.

BACKGROUND

In 1975, ACYF initiated an effort intended to address the specific needs of Spanish-speaking Head Start children. This program, known as the Head Start Strategy for Spanish-speaking Children, sought to foster preschool bilingual/bicultural education programs through bilingual/multicultural curriculum development, competency-based bilingual/bicultural training for Head Start classroom staff, the development of a National Bilingual/Multicultural Resource Network for Head Start programs, and research focusing on Spanish-speaking children. In conjunction with the curriculum development effort, the Research, Demonstration and Evaluation Division of ACYF funded Juarez and Associates, an independent management consulting firm, to carry out an evaluation of their implementation.

The Head Start bilingual/multicultural curriculum development effort is based on the assumptions that one curriculum model would not satisfy the diverse needs of Head Start centers serving Spanish-speaking communities throughout the country and that experiences provided for children whose primary language is other than English must be in the language they know best (Arenas 1978). Between 1976 and 1979, Head Start funded four institutions—The University of California Santa Cruz; Columbia Teachers College, High Scope Educational Research Foundation, and Intercultural Development Research Associates—in an experimental effort involving the development of four distinct bilingual/bicultural preschool curriculum models for use with Spanish-speaking preschool children. Although the curriculum models were based on different theoretical approaches, all of them were intended for application in settings where instruction occurs in two languages. Each provides individualized experiences according to a child's language and developmental needs. In addition, all incorporate multicultural references that facilitate cognitive and social growth.

The curriculum development and implementation effort occurred over a three year period. During the first year each curriculum model was designed in consultation with parents and staff of a cooperating Head Start program. In the second year, a pilot implementation of each curriculum model took place within a Head Start center. During the third year, each model was fully implemented in two additional Head Start centers that had no previous experience with the curriculum models. The data collected for the evaluation are based on this third and final year of the curriculum development and implementation activities. The evaluation activities were carried out concurrently with the development, piloting, and implementation activities of the curriculum model developers.

During the first year, the evaluators selected instruments in two languages that were appropriate for use with young children, developed interviews and questionnaires, assessed the suitability of recommended sites and revised the initial design. During the second year, all instruments and their administration procedures were piloted and revised and an extensive naturalistic observation component was developed and piloted. The third year, which corresponded to the third year of the curriculum development project, encompassed pre- and posttesting of children, classroom observations at the demonstration sites, and analyses of the data collected. The evaluation was designed to provide information on the following:

1. *The extent to which the models, once implemented, were meeting their objectives.* The major emphasis of the evaluation was on measuring the change in children as a result of their participation in one of the four curriculum models. This was to be accomplished both through an experimental pre- and posttest design, which included testing the domains of Spanish language comprehension, Spanish language production, English language comprehension, English language production and concept development and by the observation of children's experiences over time with the same constructs in the preschool classrooms.
2. *The feasibility of successfully implementing the models in more than one setting.* This goal related to securing information that would assist others in learning about the potential of the model for implementation elsewhere. The evaluators were to collect information regarding both the *process* necessary to implement each model and the *procedures* needed to maintain each model in a new environment, including descriptions of any special characteristics of Head Start staff, students, parents, resources, or community support needed to assure success in its implementation.
3. *The extent to which the models were greeted favorably by Head Start staff, parents, and lay community members.* This required the collection of information both at the start and end of the preschool year. Both parents and teachers were to respond to questions related to their attitudes toward bilingual education in general and to their satisfaction with a particular curriculum model.

THE EVALUATION DESIGN

Test and Interview Criteria

The evaluation was initially intended as a pre-post design with ninety children at each of the eight Head Start replication sites being assigned to treatment (n=45) and control (n=45) groups. Children were to be stratified on the basis of language preference (Spanish or English), age, sex, and any prior preschool experience. All children were to be tested on selected competency measures at the beginning of the treatment (Fall 1979) and at its conclusion (spring 1980). Child competency measures were intended to assess change in: (1) English language production; (2) Spanish language production; (3) English language comprehension; (4) Spanish language comprehension; (5) concept development in English and Spanish; (6) socioemotional development, and (7) language preference over the Head Start year.

The selection of child competency measures was conducted by screening the instruments according to the needs of the evaluation and the purpose the tests were to serve. The selection process began with a comprehensive review of other national evaluations of early childhood programs that focused on bilingual/bicultural populations. In addition, a search was made of the ERIC System, ETS Test Collections, the resources of the Head Start Bilingual/Bicultural Dissemination Center and through commercial publishers of tests for young children. An overriding concern in test review and selection was the extent to which the individual tests sampled behaviors that were consistent with the objectives of the curriculum models and the goals of the evaluation. Specific criteria for screening the instruments included: (1) measurement validity; (2) reliability, (3) appropriateness for target population, (4) appropriateness of test format and (5) feasibility of administration. The criteria employed in assessing each of these items are listed in Table 1. The reader is referred to the Review and Recommendation for the Test Battery for an extensive discussion of the procedures for selection (Moll, L., et al., Juarez and Associates, 1978).

TABLE 1*

TEST ANALYSIS CRITERIA

The following test analysis criteria evolved from the specific needs of the Bilingual/Bicultural Head Start Evaluation and were influenced in format by criteria previously developed through The Center for Studies in Evaluation, University of California, Los Angeles.

I. *Measurement Validity*
   1. Item Selection—refers to how effectively the test items are described and justified
   2. Face Validity—refers to how well the test measures specific goal behaviors as determined by a panel of experts
   3. Construct Validity—refers to the relationship of test items to an underlying construct. In other words, does the test measure what it purports to measure?
   4. Concurrent Validity—refers to how well a particular test correlates with another well-reputed test
   5. Predictive Validity—refers to how predictive a particular test is in reference to another subsequent behavioral criterion.
   6. Content Validity—refers to how closely a test correlates to a specific curriculum

II. *Reliability*
   1. Test-retest Reliability—refers to how well a test relates to individual repeated trials over time
   2. Internal Consistency—refers to how coherently or consistently the test measures a given behavioral dimension

III. *Is Test Designed for Target Population?*
   1. Utilization by Hispanics—what particular ethnic groups have previously utilized this test?
   2. Utilization by Other Programs/Evaluations—what other programs or evaluation projects have used this test?
   3. Geographical Location—what parts of the country have utilized this test?
   4. On What Age Group is Test Normed?
   5. Translation based on which ethnic group?
   6. Pilot Tested—on what groups has test been piloted?

IV. *Test Format*
   1. Visual/Auditory Attractiveness—would preschoolers be attracted to this test instrument?

2. Timing/Pacing—is it appropriate for preschoolers?
3. Level of Comprehension—how appropriate is the test's content for preschoolers? (This includes concepts, syntax, and vocabulary of instructions.)

V. *Feasibility of Administration*
1. Size of test group
2. Administration—refers to the quantity of prerequisite training required in order to administer the test
3. Administration Time
4. Ease of Scoring—how simple is the scoring procedure?
5. Score Interpretation—how are scores reported/interpreted (frequencies, norms, percentiles, etc.)?
6. Cost

Exhaustive search and development efforts led to the following recommendations:

1. *Language Preference—El Circo*/Circus—Language Check
1. *Language Production—El Circo*/Circus—*Dímelo Tu*/You Say It Bilingual Syntax Measure (English & Spanish)
3. *Language Comprehension—El Circo*/Circus—Escuchen Este Cuento/ Listen to the Story
4. *Concept Development*—Preschool Inventory (Spanish & English)
5. *Socioemotional Development*—A rating form of specified behaviors

Upon selection of the child impact instrument battery, extensive prepiloting, piloting and revision procedures were conducted. The results of these procedures are discussed in the Phase II Report of the Pilot Study Results, (Chesterfield, R., et al., Juarez and Associates, Inc., 1979).

In addition to the child impact testing, parents and Head Start classroom staff were interviewed at the beginning and end of the Head Start year for purposes of assessing impact. Parent interviews were intended to assess: (1) attitudes and knowledge about education in general and bilingual education in particular; (2) expectations and aspirations regarding their child's educational and vocational achievement; and (3) involvement in the child's learning experiences in both the preschool setting and at home.

Data were also obtained on a number of parental background characteristics. Head Start classroom staff completed a questionnaire designed to provide information on: (1) their understanding of what is meant by the terms "bilingual" and "bicultural" in the context of an early childhood program; (2) their attitudes toward Spanish-dominant and bilingual Head Start children and their parents; (3) their willingness to include parents as well as information collected from them in the instructional program; and (4) their sensitivity to the special ethnic and linguistic characteristics of Spanish-dominant and bilingual Head Start children and their ability to incorporate these characteristics in a positive fashion in the teaching and learning process.

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*From Moll, 1978.

Observational Criteria

In addition to the testing and interview component of the evaluation, an extensive observational component was added to the evaluation design. This component was intended to provide data that would allow both the nature of within-classroom interaction and the process of implementation to be characterized. Specifically, the information gained through naturalistic observations was intended to: (1) complement the results of the psychometric impact measures, thereby adding to the interpretive power of the original factorial design of the study; (2) provide criteria for assessing the extent to which the treatment was implemented; (3) furnish descriptive data on individuals participating as subjects in the study; and (4) provide in-depth analyses related to the feasibility of implementing the models in other settings.

At one of the two sites implementing each curriculum model a full-time participant researcher (PR) was present for the entire year. These sites are referred to as the research-intensive sites. In addition to the four participant researchers, four implementation researchers (IRs) were hired and trained to collect information on the degree of implementation in the classrooms of the second site where each model was being used. Each researcher, who was bilingual and had experience in early childhood education, gathered data by means of implementation forms and ethnographic notes. Participant researchers also conducted focused observations of individual children by means of time and event samples.

Time and Event Samples

These data-gathering procedures were organized to provide systematic classroom observations of behaviors related to language, concept and socioemotional development exhibited by a subset of fifteen children per curriculum model at three preselected time periods over the course of the evaluation year. Individual children were observed for equal amounts of time in three types of events: (1) structured interactions between the children and the teacher or other adults; (2) those events that emphasized adult-child interactions but were relatively unstructured; and (3) situations organized to emphasize child-child interactions.

Implementation Forms

These instruments consisted of model specific checklists, frequency counts, rating scales and informal interview schedules. The data collected focused on the degree to which each curriculum model was implemented in each of the experimental classrooms over the course of the Head Start year. Data were collected for three, two-week periods at each of the eight sites and this information was organized into categories related to classroom setting, schedule and organization, materials, individual behavior and instructional strategies.

Ethnographic Notes

These data were gathered in the form of narrative accounts, logs and inventories that were maintained over the course of the Head Start year. These procedures were used to gather information on the aspects of the general context of the study, such as the language use of the community and specific events external to the classroom (e.g., inclement weather) that might be related to the implementation of the curriculum models, as well as to examine in-classroom behaviors from the perspective of the actors themselves.

Thus two principal types of observational data were collected: child, parent, and teacher behavior data, and data on the characteristics of and implementation procedures followed at each site. Child competency on a number of the constructs was assessed through observations of behavior within the classroom. Written protocols of the observations were made on a selected group of experimental children at each of the research intensive sites. These observations were coded for behaviors identified as objectives of the curriculum models. The areas sampled were those of (1) language development, (2) language comprehension and recall, (3) concept development, and (4) socioemotional development. In terms of language development, behaviors related both to linguistic competence and functional language competence, two areas also tapped by items on the psychometric measures of language acquisition and language production, were examined.

Observed behaviors related to language comprehension focused on the ability to recall events or tell a story, as did certain items of the comprehension test. Behaviors in the area of concept development included events related to visual discrimination, seriation, sequencing, matching/classification, spatial and time relationships, symbolic representation and utilization of objects. Socioemotional development focused on school readiness, self esteem, and motivation.

Data on the nature and extent of implementation over time were recorded on a series of implementation forms. These data were based on teachers activities in the classrooms, physical organization of the rooms, organization of individuals within the classroom, materials available, and other topics of interest. The selection of this set of observational criteria was based on the objectives for each curriculum model. This procedure provided a basis for assessing the congruence between classroom activities as intended by the curriculum models and those activities that were actually implemented within a classroom or site. It is apparent that the manner in which a treatment is implemented in a classroom affects the behavior of participants in the program. Program participants, in turn, respond to classroom practices in ways that will influence the way in which a curriculum is implemented. Accordingly, the behaviors of subsample children as recorded through ethnographic notes and focused observations were also used in assessing implementation. Further, the observational data on individual children were used to assess change over time across various developmental domains, as they furnished a series of observations on the behaviors of students in specific contexts designed to encourage certain behaviors. Finally, ethnographic notes taken outside the classroom permitted the identification of constraints and obstacles to implementation of a given model at a particular Head Start Center or in certain locales.

Analytic Utility

The following examples illustrate how observational data gathering can be used to increase the utility and reliability of test and interview findings.

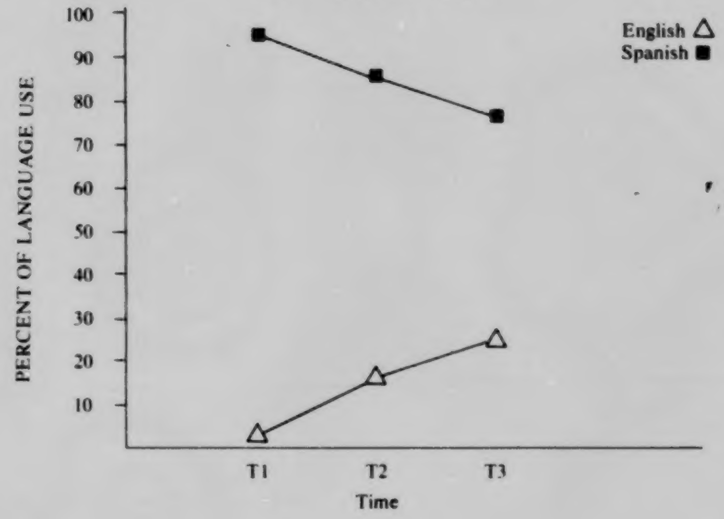
Let us presume that an analysis of Covariance (ANCOVA) is performed comparing Spanish-speaking experimental group children to their Spanish-speaking preschool control group counterparts on measures of: (1) English acquisition; (2) English comprehension; and (3) use of concepts in English. Let us now presume that significant differences favoring the experimental children are found on each of the criterion measures.

Data obtained on situations outside of the classroom allow an analysis of the predominant language of the home and community settings. Implementation data allow a comparison of preschool English instruction for control group and experimental group children on criteria such as regularity and systematic aspects of English language preschool instruction. Child impact observations allow an examination of the relative frequency of different types of utterances and of the instructional discourse that the children engaged in over the course of the preschool year. These child impact data can be characterized both in terms of developmental trends for the children and classroom situations providing practice in the language of interest.

Figure 1 provides a hypothetical situation in which there is a consistent trend over the course of the preschool year toward the use of more English. The following steps can be employed to analyze the meaning of this trend toward English acquisition, and to assess English comprehension. A first step might involve a comparison of the ratio of complete to incomplete sentences over the course of the preschool year and an analysis of the number of English words used over the course of the preschool year. Next, the quality of English language reproduction can be assessed in terms of structure, i.e., the use of past, present and future tenses and noun plural-

FIGURE 1

Proportion of Spanish and English language use by Children over the course of the pre-school year.



izations. This data analyzing technique can also be applied to Spanish language use for these same children.

An observational focal point for preschool concept development might include activities related to prereading and premath. Prereading activities might include group songs and recitations that require frequent imitations of actions and sounds that are associated with symbolic representations and other forms of construct development. Similarly, activities that emphasize shapes, color and size—attributes of objects—can be employed to assess visual discrimination aspects of concept development.

The experiences of a child whom we shall call Bonita illustrate the level of data that can be obtained on classroom practices over the preschool year.

Bonita, one of the younger children in her classroom, was an attractive girl with stunning large dark eyes. Considered by her teachers to be one of the brighter children, she was attentive in all classroom activities and often spontaneously answered questions out of turn in her eagerness to participate. Although she was Spanish-preferring, her mother and older siblings spoke to her in English at times, and by the end of the year she was able to effectively communicate in both languages. After two months in the program, Bonita's developing competence in Spanish as well as limited receptive abilities in English were evident. The speech sample below is taken from a curriculum lesson on the meaning of "alto" and "bajo":

Teacher: *¿Qué dice aquí?*
Bonita: *Yo solo lo sé.*
Teacher: (Held up flannel board signs depicting the concept of "bajo.")
Bonita: *Abajo.*
Teacher: (Held up sign depicting "alto.")
Bonita: *Arriba.*
Teacher: *Alto.* Very good. You know . . .
(Turned her attention to Bonita's restless classmates):
. . . *se quedan quietos.*
Bonita: Susie, . . . *te está portando mal*
(imitating the teacher's attention to her classmate's behavior).

Although she frequently used complete utterances in Spanish and could correctly employ the present tense, her use of the reflexive was still imperfect, as was her mastery of lexical items for concepts in Spanish. While the teacher encouraged the use of her first language by supplying her with the correct answer, "alto," she also exposed her to English by reinforcing her second language. At the same time, Bonita was responding correctly to the teacher's directives in English:

Teacher: Bonita, Bonita, come here.
Bonita: (Leaving her place at the table where she was working on a puzzle to go to the art area and saying in a warning tone to her classmate seated nearby):
Nadie va a agarrar este puzzle.
(Returned to the puzzle.)
Ya vino.

While exhibiting once again her still immature linguistic system in Spanish, as evident from her incorrect use of the irregular past tense, she was able to respond to directives in English, and used isolated English vocabulary words in code-switching. She was observed around the same time periodically correcting her peers' mispronunciation of her young "boyfriend's" name in English.

Near the end of the school year, Bonita's use of English had increased to the point where she could successfully carry on a conversation. During meal time, for example, spurred by the motivation of communicating with her English-preferring male friend, she was observed using complete sentences in English and repeatedly employing yes-no questions, with variable use of the do-AUX, one of the most difficult morphemes for Spanish speakers to acquire:

Bonita: You like crispy, Tommy?
(referring to the chicken lunch for the day).
Do you like that? Tommy, you like this?

Although she omitted a noun referent for "crispy," her meaning was clear.

Late in the year, Bonita's periodic code-switching continued, although she was now using Spanish to substitute for unknown English words, in contrast with her strategy in the early part of the year. During a curriculum lesson involving the identification of vocabulary for colors and animals, Bonita exhibited this tendency, as well as a mastery of a surprising number and variety of English lexical items:

Teacher: What color is the bat?
Bonita: Black . . . *vampiros* . . . and gray . . . *acá*
(pointing to her neck).
Teacher: (Continued the exercise by holding up colored animal cards and asking "What color . . . ?")
Bonita: (Continued with her rapid identification):
Baby cow. Brown and white . . .
Penguin, black and white.
Baby horse.
Donkey.
Dog. Pink and Black. *Los ojos* black.
Red bird.
The corn *es* yellow.
Boat, alligator, seal, shark, rooster . . .
Teacher: (Finally, the teacher tired of Bonita's enthusiasm, which tended to intimidate the other children, and she complained):
No más, Bonita. *Digan Uds. tambíen.*

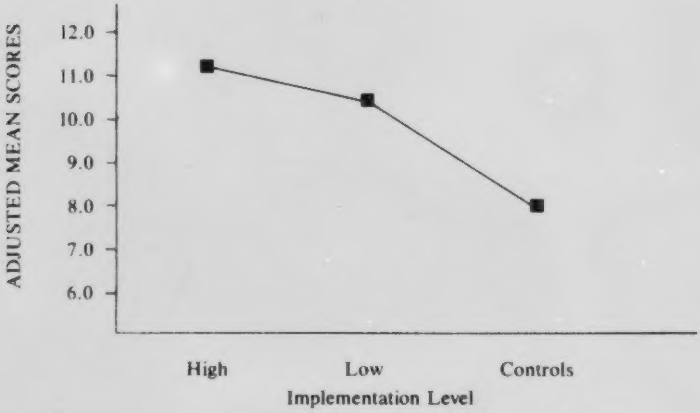
Although Bonita's use of the article was variable (e.g., "red bird" versus "the corn"), she used correct word order, preceding the noun with the adjective. Hence the analysis of the child's interactions as recorded in fieldnotes allows a characterization of the children's speech within the classroom context not possible through test results alone. It is therefore possible to show that by the end of the year the child was able to respond to the varied and more complex English forms being directed to her by the teachers, as well as meet her communicative needs with her English-speaking classmates.

A second hypothetical example points out the importance of characterizing the implementation process when evaluating bilingual programs. Implementation scores can be calculated for each of the classrooms at the site for each point in time and for each of five implementation areas—i.e., schedule and organization, physical setting, instructional materials, individual behaviors and instructional strategies.

For purposes of exploratory analysis, classrooms can be classified in terms of degree of implementation. A composite score can be derived by adding the total scores for each time frame and obtaining the mean score. Classrooms can then be ranked in terms of high degree of implementation and low implementation. Figures 2 and 3 compare children from high implementation classrooms with those from low implementation ones, as well as to their control group cohorts, on the various language and behavior measures.

FIGURE 2

Adjusted Mean Scores on English Concept Development Measures for High Implementation, Low Implementation and Control Group Pre-school Control Classrooms.



For illustrative purposes let us say that results on the measures sustain the trends found in the implementation analysis. As would be expected, children in the high implementation classroom score higher in English concept development than do children in the other two groups (Figure 2). These children also outperform both their experimental and control group peers on Spanish acquisition measures (Figure 3). However the low implementation children score significantly higher than both high implementation and control children in English language acquisition (Figure 3). In examining Figure 4, which represents the individual behavior category of the implementation analysis, we find that these differences between the high and low implementation classrooms can be explained by the fact that the children in the low implementation classrooms were exposed to more English than were the children in the high implementation classrooms. Thus, the observational component can be used to explain results that may seem inconsistent with overall findings.

FIGURE 3

Adjusted mean scores on English Language Acquisition and Spanish Language Acquisition measures for High Implementation, Low Implementation and Pre-School Control Group Classrooms.

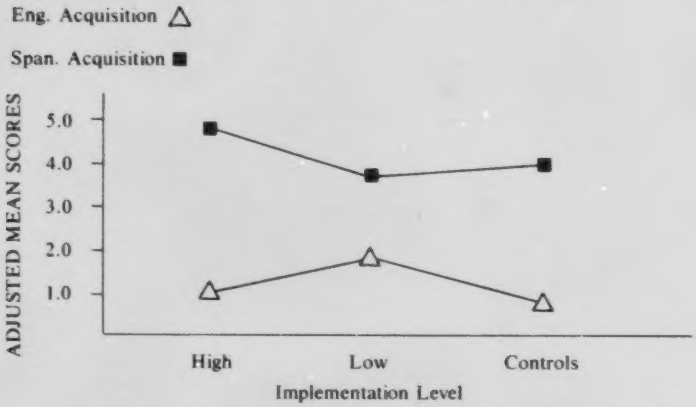
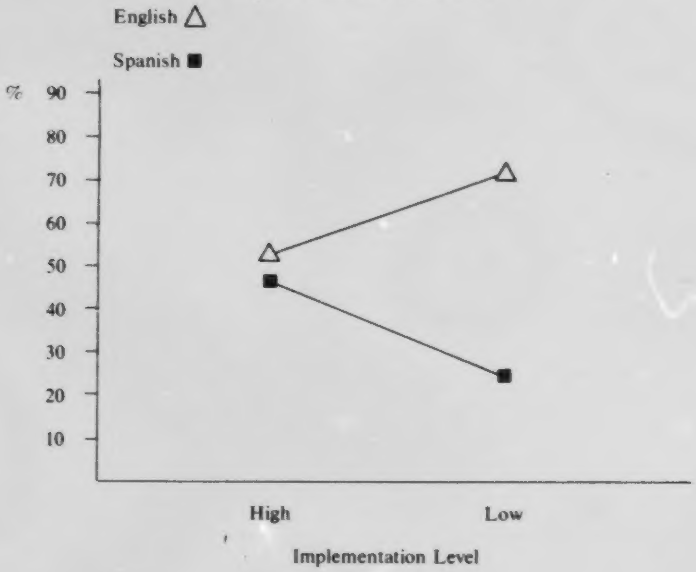


FIGURE 4

Percent of English and Spanish usage by teacher aides in the high and low implementation classrooms.



DISCUSSION

In summary, this paper has presented a methodological approach that integrates quantitative and qualitative procedures in evaluating the effects of bilingual/bicultural Head Start programs on young children. It is argued that by linking observations and psychometric instruments to a particular set of phenomena, increased reliability can be achieved by allowing an in-depth examination of both process and outcome variables. Thus, although the qualitative data collection should not be viewed as an ethnography per se, the focused approach we have taken may be more useful than a "holistic" one in the context of an evaluation study.

A strength of the multimethod approach is that the participant researchers' observations provide sufficient data to avoid emphasizing irrelevant aspects of the curriculum and help the evaluators document accurately the actual nature of the treatment. The qualitative analysis adds to the likelihood of accurately assessing the skills of individual children and change in those skills over time. Additionally, the use of an interactional analytic process in which information derived by quantitative methods is compared and contrasted to results gathered through qualitative means, enables a more specific and accurate interpretation of the consequences of the complex interactions between the children, the teacher and the task environments that are intended to promote the curricular goals of the models being evaluated.

Finally, the approach suggested here allows for systematic study of many issues of concern to teacher trainers, program staff, and policy planners with attention to both program processes and outcomes. The various ways of collecting data can enable interested parties to determine which factors hinder or promote accurate program implementation in different settings, which are the positive common aspects of several different curricula, and what are the consequences of participating in such bilingual curriculum programs for students, parents and teachers.

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THE MICROETHNOGRAPHIC STUDY OF BILINGUAL SCHOOLING

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Microethnography represents a major effort by educational researchers to ground their investigations of schooling in what actually occurs in the classroom.[1] A basic premise of all microethnographic studies is that social events such as formal lessons, counseling sessions and other learning acts are interactional accomplishments (Mehan, 1978, 1979, 1980; McDermott, 1976). Hence, a primary goal of such studies is to characterize the social organization of lessons or other educational events by describing in detail the interactional work of the participants that assemble these events. A concomitant goal of microethnograpy is to specify the educational consequences that these processes have for the students.

The aim of this paper is to discuss several interrelated features of microethnography that are particularly relevant and useful for the study of bilingual schooling. I will argue that this interactional approach provides us with a powerful way to systematically study the organization of bilingual learning environment, identify areas of difficulty and suggest concrete interventions for beneficial change. A recent study conducted in a bilingual school (Moll, Estrada, Diaz and Lopes, 1980) will be used to illustrate the following key aspects of microethnography: (1) the use of videotape as a data collection tool, (2) the participation of teachers as co-researchers, (3) the study of context as an interactional notion, (4) the use of communicative activities as unit of analysis, and (5) a focus on the role of the adult in the construction of learning environments.[2] I will conclude with a discussion of the implications of this approach for the study of learning in bilingual programs.

Before undertaking a discussion of these issues, I will preface by briefly mentioning microethnography's close, but often overlooked connection to the traditional ethnographic method of study. Trueba and Wright (1980), for example, have pointed out that microethnography developed as a contemporary extension to the ethnographic method and, as such, shares with traditional ethnography, as practiced by cultural anthropologists, several key principles of fieldwork and interpretation.

Ethnography is an attempt to describe and understand a culture, a way of life, or a specific cultural event or practice, such as child rearing, from the "native" point of view. It is the task of any ethnographer to study people's actions and the concrete circumstances in which these actions take place. Similarly, the unit of study in microethnography is always organism-environment interaction. This emphasis leads to a view of a person as an active, creative part of his or her environment, i.e., the focus is on concerted activity (behaving) rather than on the individual as an agent of action apart from that environment. Further, such studies recognize people as the most salient parts of each environment. Therefore, in microethnography, "a person's behavior is best described in terms of the behavior of those immediately about that person, those with whom the person is doing interactional work in the construction of recognizable social scenes or events" (McDermott and Roth, 1978; p. 321). Out of such interactions come the "structures" that some sociologists and anthropologists consider to exist on a separate "macro" level. The position of microethnography is that the "macro-micro" distinction is a false one; this dichotomy clouds the often complex ways in which seemingly independent structures are constructed from and emerge out of social scenes and events.

There are other important similarities between ethnography and microethnography that deserve mention. For example, both are highly structured and systematic enterprises that involve "rules of evidence and inference" that must be applied to data before generalizations can be legitimately made. Central to our present discussion, however, is an essential requirement shared by both approaches: that all research studies take into account the insiders (native) perspective in the analysis and interpretation of behaviors. To fulfill this requirement, traditional ethnographers rely extensively on the insights of native informants and on immersion into the native culture to obtain the insider's point of view (Spradley, 1980). In a similar fashion, classroom researchers rely on naturalistic observations, interviews, and, as will be discussed in a later section, on the use of teachers as collaborators in the research enterprise.

These two traditions of study differ in the nature and the scope of work, as well as on the level of specificity of the descriptions and accounts generated (see Trueba and Wright, 1980, for a more complete discussion of these issues). For example, traditional ethnographies tend to be relatively holistic and general, as when there is an attempt to describe the whole way of life of a tribe, community or society. Accordingly, these studies involve extended fieldwork and the use of native informants and long term participant observations to provide general and full descriptions of events (see Spradley, 1980). In contrast, microethnographies usually focus on the organization of particular and specific behavioral interactions in specific institutional settings. Here, researchers also rely on long term observations, but supplement these observations by the use of videotape recorders to provide detailed descriptions of the behavioral interactions of individuals in specific contexts *and* the relationshp among these contexts. The remainder of this paper will focus on these aspects of microethnography and their relevance to the study of bilingual schooling.

The Use of Audio-visual Records

In microethnography, as well as in all other approaches that include the collection of naturalistic observations, behaviors constitute the research evidence. But as Bloom (1978) has noted, any description of behavior will be necessarily contrained by the process of observation:

> As soon as one begins to record, describe, and interpret behaviors, there is a loss of information, and successive reductions of the data continue to restrict and limit their informative power. For example,

> once an event is recorded—whether recorded by hand or by electronic audio or video tape recorder—something is necessarily left out of the record. The microphone and the camera, much less the eye, the ear, and the hand, can never preserve the detail, nuance, and complex circumstances of events. The process of transcription reduces mechanically recorded data further and provides another constraint on the available information: it is not possible to copy off the richness of tone and detail that can be preserved on tape. And as soon as one begins to categorize events for the purpose of description, then other possible categories are automatically ignored: "Description involves division and classification which excludes other possible divisions and classifications and hence other possible descriptions" (Beer, 1973, p.53). The original behavior, being a temporal event, only leaves a residue of information in the record that is made of it and the ultimate interpretation that is given to it. *However, depending upon how accurate a record is made of the event in the first place and how accessible the record is for redivision and reclassification it is possible to explore and evaluate successive schemes for categorization.* (Bloom, 1978, p.2, emphasis added).

It is precisely because of these reasons that microethnographers supplement classroom observations by means of videotape or film. The speed of action and simultaneous occurrence of classroom events make it difficult to report on specific behaviors fully by means of field notes or other data recording devices. There is an unavoidable loss of information that precludes reevaluation or interpretations of the original behaviors. Videotaped events provide the microethnographer with retrievable behavioral data in close to original form. As Mehan (1979) points out, videotape recordings serve as an "external memory" that allows researchers and practitioners to examine interactions extensively and repeatedly. This allows the validity of the interpretations to be open for inspection. Disconfirming evidence and alternative interpretations of the data can be seriously entertained.

The use of videotaping, however, creates a legitimate concern over possible reactivity or observer effects due to the presence of outsiders and strange equipment in the classroom. Although it is unlikely that reactivity can be totally eliminated or controlled, it can be systematically reduced and monitored. For example, several visits can be made to the classroom before the collection of actual data in order to introduce the participants to the equipment and to the taping procedures. During the initial visits, teachers and students can be taped in an informal manner and given the opportunity to view themselves on the monitor. In subsequent visits, all are asked to ignore the equipment and engage in regular classroom activities as they are being taped. It has been my experience that by the third or fourth visit the participants are virtually accustomed to the presence of outsiders and to the equipment. The tapes can be shown to the teachers who can help confirm if the events look "natural" or representative of everyday classroom behaviors. During the course of the study, records can be kept to monitor or account for any unusual disruption of the regular classroom routine.[3]

The Use of Teachers as Co-researchers

As with any study that is ethnographic in nature, a goal is to "make contact" or obtain the "insiders" perspective or point of view about the events observed. One aim is to ensure that the descriptions and interpretations of the classroom events accurately account for the factors or social constraints that help organize teacher and student behaviors. Mehan (1979) calls this obtaining convergence between researchers' and participants' perspectives. The goal here is to ensure that the structure that the researcher sees in events is the same one that orients the participants in those events.

Consequently, teacher participation in microethnography goes beyond their consent to be videotaped and studied, and includes an expanded role as paid consultants or collaborators (cf., Wallat, Green, Marx, Conlin and Heramis, 1981). The primary goal is to ensure adequate teacher input during the planning and implementation of the project and during the analysis and interpretation of the information collected (for the teacher perspective on the collaborative role, see Quinsaat, 1980). In the study reported below collaboration was accomplished in the following manner:

First, planning meetings were scheduled regularly with the teachers. The purpose of the initial meetings was to explain the study and discuss their role as participants. In particular, we explained our interest in exploring the role of communicative activities in determining how and what children learn in a bilingual setting. We also discussed the comparative nature of the study design and how we intended to organize data collection. Two separate classrooms offering separate instruction in Spanish and English were involved in the study. Both of the teachers were asked to specify those classroom activities they as practitioners regarded as most *relevant* or important for study, given our interests in contrasting lessons or events across classrooms. They suggested we observe the reading lessons because they are pedagogically important events and represented an excellent opportunity to observe the same children in both Spanish and English engaging in similar curricular activities. After this teacher-researcher discussion, it was decided that the reading lessons would become the focus of study.

The teachers were also interviewed regarding the placement of children into ability groups and how these placements were determined. In addition, information was also gathered on the details of the instructional model as implemented. Also discussed were real-life constraints, such as the teachers's schedules, any further demands or commitments they had, and the time they could realistically devote to the project. Practical matters were taken care of, such as the development and signing of teacher consent forms describing their roles as collaborators, the amount of remuneration they were to receive and their right to request not to tape any particular event or to erase any scene they desired. No such request was ever made during the study. In addition, we solicited teacher suggestions about where to place the videotape equipment in the classroom so as to minimize disruption.

Secondly, after a series of lessons were videotaped, "viewing sessions" were scheduled at one of the teacher's homes (for more information on "viewing sessions", see Shuy and Griffin, 1978). The goal of these sessions was to ascertain the representativeness of the lessons taped, discuss any observable disruption in the class routine owing to the presence of outsiders and videotape equipment, and generate teacher impressions of the lessons taped before any specific hypotheses were developed or issues raised. The format of these initial viewing sessions was informal and the teachers were simply invited to view the tape at their own pace and stop the tape at any time to comment on any aspects of the interactions. These comments were recorded on audiotapes and field notes. It should be emphasized that these were not structured interviews but a chance for the teachers to express their feelings and opinions on what they were observing.

Later viewing sessions followed a more structured research agenda. During these latter sessions teachers were shown preselected segments and asked specific questions about the ongoing interactions. The questions had been generated during the in-depth analysis of the videotapes. Issues explored included reasons for choosing a particular focus of instruction, teacher perceptions of the children's competence, the coordination of lessons within and across classrooms, the role of aides and the use of materials, and teacher training.

Context

Another characteristic of the microethnographic approach that is significant for bilingual investigations is the emphasis on context as a major determinant of human behavior. An important analytic task is to "place" or "integrate" the participant's interactional activities as part of the particular context of occurrence. In this sense, context is not limited to the physical location or the characteristics of the participants, although these are clearly influential. Context is an interactional notion; it is constituted by what the participants are doing, which is only partly conditioned by where and when they are doing it (Erickson and Shultz, 1977).

A very similar idea is proposed by Fortes (1970) in his discussion of traditional forms of education. For Fortes the interactional context is called "social space" and it's function is discussed in connection with the growing child's interactions with his or her environments. Fortes characterized the social space as "the part of the society and habitat that the child is in effective contact with" and emphasized, as we will, the crucial role of adults in controlling access to, and behavior in, the important contexts of adult life.

Thus, the microethnographic approach emphasizes the study of schooling and learning as *context-bound activity*. This interactional concept of context is particularly important for the study of classrooms that may include students and teachers from different ethnic groups who speak two languages with various degrees of fluency. In such dynamic settings interactional contexts may shift rapidly from one moment to the next; the research strategy must try to account for these changes by studying the actual process of interaction between an individual and his environment, not just a static measure of the products of interactions.

Communication

In most cases, particularly in classrooms, person-environment interactions consist of communications between and among people for the specific purpose of problem solving. In addition, the activity we call learning or problem solving always involves many partial goals, the achievement of which requires joint, collaborative activity by teacher and students. Hence, in the study of any learning activity, the unit of analysis becomes the system of acts that comprise learning. Consequently, a critical task in the microethnographic analysis of classroom behaviors becomes a careful and detailed description of the learning activity (e.g., reading lessons) in context, as jointly produced or assembled by the teachers and students. Such sequences include the initiation of questioning by the teacher and the complementary answering of questions by students, the distribution and use of educational materials; i.e., and all jointly assembled communicative and educative interactions between teacher and students that characterize the learning contexts.

Probably more than any of the other instructional areas, a bilingual curriculum focuses attention on the development of language proficiency. The emphasis, however, has been on a general or global language proficiency as usually assessed by standardized tests. Because it is treated as a self-contained, scorable ability, language proficiency is commonly analyzed independent of its role or function in specific academic or lesson domains (Cf., Griffin and Shuy, 1978). Within the present approach, we want to be able to describe the *communicative activities* that make up lesson environments of which language is a part, rather than deal with language as an abstract formal system.

For example, in his study of an ethnically-mixed classroom in San Diego, Mehan (1979) presents a detailed and formalized analysis of nine different lessons in which he clearly depicts the classroom as an integrated interactional system. His analysis reveals an orderly and hierarchically structured organization of behaviors that control the interactions, tasks, and language production of the students. He describes lessons as a series of initiation-reply-evaluation sequences between teachers and students. That is, an act initiated by one classroom participant, usually the teacher, is followed by a reply, usually by the student, which in turn is most often followed by a teacher evaluation of the reply. This ordered set of moves occurs with great regularity and contains the primary mechanisms that constitute the formal lesson or learning environments in which children are asked to develop skills. To be competent respondents in classroom lessons, students must be able to understand the instructional function implied in the teacher's speech acts, and provide replies that are appropriate both in form and content (see Mehan, 1979).

The type of interactional structures described by Mehan constitute most formal classroom lessons. The role of the adult in implementing systematic variations in the organization of the communicative acts that make up lessons is critical, because these variations may produce differential learning conditions for students. In that respect, the adult is ultimately responsible for defining the nature of the intellectual experiences that children encounter in school. This role of the adult will be examined more closely in the following section.

The Role of The Adult

As mentioned earlier, classroom microethnographies are concerned with how participants organize events like formal lessons and with the implications that these processes have for the students. An early example is Philips' (1972) study of the cultural organization of social relationships in the Warm Springs Indian reservation in central Oregon. She identified and described the different ways that adults and children organize verbal interactions in social situations that occur in the classrooms and in the community. She contrasted these two environments and found important differences in the "participant structures" or ways of interacting found in each setting. The key difference involved the role of the adult in the interactions. Briefly put, at school, during the implementation of the curriculum, the adult usually controlled all communicative activity by questioning, allocating turns, deciding who should talk and when, and so on. In such situations, the Native American students usually failed to answer, or were simply silent much more often than their white classroom peers.

Outside the classroom, however, in every day situations on the reservation, Philips noted several differences in how verbal participation was organized. Most notably she found that participation structures typical of classroom lessons never occured in the student's daily lives. Further, and of importance, her comparisons showed that when participation structures resembled those encountered by the children in every-day social situations, the students used speech a great deal. Conversely, when such structures were absent in classroom situations the children failed to participate verbally. This is an important point because, as Philips notes, in classrooms speaking or verbal interaction is the first and primary mode for acquiring *and* communicating competency in all of the areas of skill and knowledge that schools purport to teach.

Building on the findings and interpretations of Philips, Erickson and his associates (e.g., Shultz, Florio and Erickson, 1980) have conducted a number of classroom studies. In one such effort, Erickson and Mohatt (1980) examined the cultural organization of social relationships in two classrooms of Native American children who were taught by a Native American and non-Native American teacher respectively. They report qualitative differences in the organization of verbal participation between classrooms and, in particular, differences in the *role of the adult* in directing and controlling how verbal interaction is organized. For example, the non-Native American teacher consistently and frequently directed questions to individual children and praised or reprimanded the behavior of individual students publicly. In contrast, the Native American teacher almost always avoided directly questioning individual students and almost never commented evaluatively on the students' behavior in public.

These and other studies suggest that differences or variations in the teacher's (adult's) organization of lessons may have important *academic* consequences for the students. McDermott (1976, 1977) also addresses this issue in his microethnographic study of the organization of reading lessons in a first grade classroom. He argues that the children who enter school lacking reading skills are quickly identified by the teacher as pedagogical and organizational problems because they need more of the teacher's time and effort to progress. Given the constraints on the teacher, such as pressures to sort children into different ability groups, the teacher makes adaptations in the focus of instruction that result in these children receiving only one-third as much time on reading activities as children who are better readers. These children end up receiving little practice on those very activities they need most to develop advanced reading skills.

A study by Au (1979) based on similar assumptions about the social organization of instruction presents the other side of the coin, so to speak. She examined how young Hawaiian students with a history of low achievement in reading are successfully taught to read. Briefly put, she documented how the teachers implemented contexts for teaching specific reading skills in the classroom that resembled a "talk story," a form of collaborative narrative that is a special speech event in the children's culture. This reorganization of the ways children participated in the lessons not only made the lessons more relevant for the children, but shifted the focus of instruction from phonics to reading comprehension; a shift in context and content that seems to account for the improved reading performances.

In the following section, I will demonstrate the use of the characteristics of microethnography reviewed above by presenting examples from an analysis of lessons in a bilingual program.

A Study of Bilingual Schooling: A Contrastive Analysis

The data reported here are taken from a study conducted in a combined second and third grade classroom in a school south of San Diego, bordering Mexico (for a complete account of this study, see Moll et al., 1980b).[4] This school implements a "maintenance" bilingual program aimed at promoting academic development in two languages. Two "sister" classrooms were involved in the study—one with a Spanish curriculum and one in English. During the course of the day the children received instruction in basic skill areas (e.g., math and reading) in their native language and went to the other classroom for oral language and reading lessons in their second language. All third graders that formed part of three different teacher-defined ability groups were observed and videotaped as they took part in their Spanish and English reading lessons. The Spanish teacher was a female, Mexican-American and a fluent bilingual; the English teacher was a male, Anglo, English monolingual.

In the examples presented below I will contrast a high ability group lesson across the two different language and instructional settings. The same children form the high ability group in both classrooms and all of the children are fluent bilinguals. This group will be highlighted because it provides the most striking example of how differences in lesson organization can determine what students do or do not learn as part of a bilingual curriculum. But, as it will become clear, it is not the language of instruction that is in itself responsible for this critical difference. It is the general focus of instruction within each language setting and the organization of lessons that this focus entails.

The Spanish Classroom:

The children in the high group engage in the most advanced reading tasks in the classroom. Although they perform tasks that children in the lower groups are also asked to perform, such as reading passages aloud for the teacher, their lessons are primarily devoted to reading comprehension activities. As part of these activities the teacher will ask questions about a story the group has read, often pursuing questions that arise from the exchange with the students and the topics developed by these exchanges. The questions are text-free for the most part, although some are taken from the book. The emphasis in these exchanges is on the students' communication of *generalizations* drawn from the readings, rather that from student answers to specific text-related questions. In the following example, the teacher starts a combined evaluation/instruction activity after the group has read a poem about a cobbler.[5]

1. T: Sandra, what is this poem about?
2. C: About a cobbler.
3. T: What is he doing?
4. C: Using his hammer.
5. T: Right. *Tipi Tapa*, who is making that sound?
6. C: The hammer.
7. T: The hammer, right. Does the poem say that he is a good cobbler or a bad cobbler?
8. GR: (Group) (mixed responses)
9. T: Yes or no?
10. GR: He's a good cobbler.
11. T: He is? How do you know?
12. GR: (Several students respond together)
13. T: Where does the poem say that he is a good cobbler?
14. GR: (Several students respond together)
15. T: Sandra, read the part that tells us.
16. C: (Reads) "*Ay tus suelas, zapa-zapa-zapatero remendón, Ay tus suelas, tipi-tapa, duran menos que el cartón*!
17. GR: Bad shoemaker.
18. T: Why is he a bad shoemaker?
19. C: "*Duran menos que el cartón.*" (They [soles] last less then cardboard.)
20. T: How long should the soles last?
21. C: A little less time than the nails. (The teacher laughs at his response and then the lesson continues.)

It is important to mention that the poem itself has no direct reference to whether the cobbler is a good or bad shoemaker. Such a conclusion must be inferred from the information given in the poem. The teacher invites this generalization in line 7. There are some differences of opinion among the group about whether or not the cobbler is good (competent) (8, 10, 12). The teacher selects a student who has answered that the cobbler is not too good, to specify which lines of the poem she used to reach her conclusion (15). She does (16), and the group confirms her opinion (17). The instructor then requests more information (18), a child quotes the exact part of the line (19) that tells the reader that the shoes do not last long. In this example the teacher relied solely on her exchange with the students to guide their actions, controlling alternatives by her choice of questions and by directing the children to find the relevant part of the text.

The children in the high group are also required to write book reports. This activity typifies the most advanced reading-related activity found in this classroom. The students have to select a book of interest to them, and virtually without adult help, read it, analyze the content and write a report. Through the process of writing reports the children display their mastery of reading skills and create a new product (i.e., the book report) in the process. In a sense, the children have come full circle; from the struggle to comprehend writing to creating it as a new product. They are literate.

The English Classroom

Once the analysis on the Spanish reading lessons was completed, the same procedures were applied to the examination of the English lessons for the same children. As the review of the Spanish reading activities makes clear, the children in the high group can read for comprehension. Nevertheless, the English lessons are primarily organized to provide time on decoding and oral language practice, such as word construction and the identification of sounds. To a small extent the lessons contain reading activities designed to assess comprehension. In the next example the teacher is assessing whether the children have understood the passages he is reading to them.

1. T: "Sue played on the playground after lunch."
   Where did she play?
2. S: (The students bid to answer.)
3. T: Julio.
4. S: Playground.
5. T: All right, on the playground. Who was it?
   Who was doing this?
6. S: Sue.
7. T: All right. When was it? When was it?
   Eduardo.
8. S: After lunch.
9. T: All right, after lunch. "Joan had dinner at night at her own house."
   When did she have dinner?
10. S: At night.
    (Lesson continues)

It is clear that when the children shift from one language setting to another, they do not encounter "similar environments." In the English classroom, complex inferences are not involved; the lessons merely require that students recall information that is less distant in time and book reports are not even considered. There is little correspondence of environments for the high group in English, which, after all, has demonstrated the ability to read with comprehension beyond what they exhibit in the example above. The organization of the reading environments in English is such that students are made to focus primarily on the mechanical tasks of practicing decoding skills, word sounds or lexical meaning. Practically absent are key activities that promote reading *comprehension* and help the students learn how to *communicate their knowledge* of content. In short, we do not find the types of functional communication activities related to reading that occur in the Spanish setting for this group.

A possible explanation for the organization of "lower level" lessons in English, in comparison to the Spanish lessons, is that the children are weak in English and cannot engage in more advanced reading tasks. This "English deficiency" explanation may make sense for some children in some situations, but in the present case the children are all fluent bilinguals and were videotaped in various situations using English without difficulty.

Further, the analysis of the Spanish lessons clearly shows that the children know how to read. But if the children are sufficiently fluent in English and possess decoding skills, how is the difference in the level of performance across classrooms constructed? If most of the children can already decode in Spanish, why are the English lessons organized to place so much importance on phonics or accurate pronunciation as if they did not have decoding abilities? A likely source of the problem is that in the English setting, pronunciation problems and decoding problems are being confounded. The teacher seems to be assuming that decoding is a prerequisite to comprehension and that correct pronunciation is the best index of decoding. The implicit theory guiding instruction is that correct pronunciation (decoding) must precede comprehension (cf., Goodman, Goodman and Flores, 1979). Consequently, the teacher organizes the lessons to provide the children with the necessary time on the task to help them practice pronunciation, phonics, and other aspects of language learning such as lexical meaning. In so doing, higher order (comprehension) reading skills are structured out of the lesson's interactions.

The "viewing sessions" with the teachers provided more information about the interactional sources of this mismatch between language settings; specifically, that because of the teachers' demanding schedules, they had never observed their students perform in each other's classrooms. Until the English teacher viewed and discussed the Spanish videotaped lessons, he had little idea that the children's level of performance in Spanish was much higher than what they exhibited in his classroom. This lead to a false representation of what the students knew about reading. Similarly, since the Spanish teacher was unaware that there existed such a discrepancy in lesson levels across classrooms, there were no suggestions forthcoming that could help modify the organization of English lessons to complement what was going on in the more advanced Spanish classroom. Although differences in the organization of lessons across language greatly influences what and how students learn, teachers do not seem to focus on how the structures of the communication activities characteristic of lessons in both classrooms determine the nature of the intellectual experiences for the children.

Conclusion

The analysis of lessons across language and instructional setting indicates that the manifestation and complexity of reading behaviors in the two classrooms is heavily influenced by the way the teacher organizes interactions in the lessons found in each. This organization of lessons, in turn, is strongly influenced by accepted organizational constraints and presuppositions about the children's competence. Important communicative activities associated with the more advanced Spanish classroom were generally absent from the English setting, giving the appearance that the children were competent readers in Spanish but inadequate in English. These results suggest that the extent to which transfer of learning in Spanish can be manifested in English depends on similarities in the organization of lessons found in the two classrooms. This position is consistent with a large and growing body of literature showing that learning is primarily situation specific; generalizability to other situations depends on whether the environment is organized to provide *similar features* that will facilitate its applicability to a different setting (Laboratory of Comparative Human Cognition, in press).

There are important implications for bilingual schooling in such a conclusion. For one, the study shows how easy it is to misassess a child's language/reading competence because the two skills are so closely linked. For example, a person observing the children only in their English lessons, without the benefit of also studying the children in their Spanish classroom, may readily reach erroneous conclusions about the children's *reading skills*. If one considers that the majority of the Latino children go to schools where only English monolingual instruction is provided, this becomes a serious concern. Although we are dealing with only two classrooms, these issues remind us of the warnings in the cross-cultural literature regarding the evaluations of performance in situations that are divorced from the everyday contexts in which people learn and regularly use their skills (see, Laboratory of Comparative Human Cognition, 1979). At the very least, we need multiple assessments of bilingual children that seriously take into account the influence of the situations in which skills are evaluated (LaBelle, Moll and Weisner, 1979; Moll, 1978).

The results also emphasize the need to study carefully the situation to which skills are supposed to transfer. An explicit purpose of most bilingual schooling is to stimulate the cross-lingual transfer of skills. It is expected that the children will apply in English the skills they learn in their first language (Spanish in this case), thus accelerating their academic competence in English. In the classrooms observed, the English lesson environments are not organized to facilitate transfer of reading skills from Spanish. As discussed above, this occurred, in part, because the lessons in English were organized and implemented independent of information about what occurred in the academically more advanced Spanish lessons. As a result, the English lessons restricted the children to behaviors that were beneath their actual level of reading development.

The situation described in this paper is a strong reminder that all education is, in a real sense, re-education; a child's learning should never have to start from scratch. That is, all learning that occurs in the classroom has a previous history outside the classroom (Vygotsky, 1978); in the case of the examples provided, the content and interactional specifics of some of that history could be found in the (Spanish) classroom next door. Failure to take this history into account led to a focus of instruction that included unnecessarily simple reading tasks and to an uncritical acceptance of the children's low level of performance.

Effective instruction builds upon the many skills that children bring into the classroom. Bilingual schooling attempts to accomplish such instruction by teaching children in the language they already know and by also including content and activities that are culturally relevant to the children's background. It must also attempt to incorporate into existing lessons ways of interacting that are congruent with the conditions under which the children have learned and developed the skills the program is trying to teach.

Griffin (1977) has already documented the extent to which the teaching and learning of reading may occur as part of other classroom events. In these cases reading is used as a tool by the children to accomplish other ends, something that usually does not occur within formal lessons. This additional practice and experience that the children receive in reading may have, or could be organized to have, important implications about how and what is taught in the formal reading lessons. The same argument can be made for exploring the functions of reading outside the classrooms, and how these reading activities are culturally and socially organized in the community where the children live. Au (1979) provides a good example of how information from the children's activities in the community may be incorporated into reading lessons, critically affecting their educational impact. This paper makes a similar argument in terms of the relationship between reading lessons across languages.

This type of detailed analysis of reading behaviors is only possible if we directly examine the contexts where learning takes place. Microethnographic studies provide valuable insights into how learning is mediated by the adults in the classroom and how concrete activities of communication shape the way children cope cognitively with different learning tasks. This information can be used to help teachers in bilingual programs coordinate the organization of lessons in two languages so that the children can take advantage of all their existing and developing skills as they participate in formal lessons.

NOTES

1. The term "micro" in microethnography is sometimes erroneously associated with either a brief period of observation or with the micro/macro distinctions commonly used in the social sciences. As used in this article, it refers to the well-defined, selective focus of study of such investigations and to the specifiability sought in the analysis of social interactions.
2. There are, of course, other aspects of microethnography that are relevant to the study of bilingual settings but are not discussed in the present article. These include issues of validity and reliability (Erickson, 1978; McDermott, 1976), strategies of data collection and analysis (Griffin and Shuy, 1978; Erickson and Shultz, 1977), and data reporting (Mehan, 1979). The reader is encouraged to consult the above mentioned references.
3. For the most complete discussion on the use of visual recordings in classrooms, see Griffin and Shuy, 1978; for exemplary methods of data management and reduction in a bilingual classroom microethnography, see Carrasco, et al., 1981.
4. This research was supported by a grant from the National Institute of Education—G790024.
5. This example was translated and edited for brevity by the author.

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Part III

EPILOG/EPÍLOGO

Reencuentro con la teoría y la política

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A TOPOLOGICAL MODEL OF BILINGUAL INTERCALATION BEHAVIOR*

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TRADITIONAL VIEWS OF BILINGUAL INTERCALATION

The use of elements of more than one language in a single utterance or code has been variously interpreted as the result of language interference from a stronger system, the inability to master two language systems, a random phenomenon, and even as a social skill. Additionally, several typologies and descriptions have been advanced that encompass individual motives and linguistic structures, both permissible and prohibited, as key categories. This paper reviews issues and analyses in bilingual switching (or intercalation, as we call it), and proceeds to offer a topological model to represent the activity of speaking first in one code then in another, sometimes under the same environmental conditions and with the same interlocutors.

Changing from one language to another has appeared to some to have pathological overtones, for they assume that such behavior is due either to an inability or lack of concern with keeping the two language systems separate. Obviously, such views imply quite traditional and rigid ideological perspectives of language and culture as monolithic complexes. Evidence against the one-language-one-culture viewpoint emerges readily from a close look at language in complex multinational societies. Such societies usually exhibit a stratification of languages and language varieties. Moreover, both monolingual and bilingual speakers have objected to the intercalation of languages. Such opinions persist in spite of the fact that there has been no simple and clear definition as to what constitutes an unmistakable case of intercalated speech, nor a clear explanation of its causes. And so unless a very inclusive definition of the phenomenon operates, many quite different linguistic activities are being referred to by the same term. This state of affairs tends to promote, even rationalize, a wide variety of nonempirical views of mixed language phenomena.

The matters of definition and typology have been perennial concerns in articles dealing with language contact situations. This literature ranges from

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scholarly research to journalistic essays in the popular press. Serious works range widely from Weinreich's seminal volume, *Languages in Contact* (1953), through listings and typologies, to the mathematical grammars of switching, represented by Sankoff and Poplack (1980), and the present exploration in topological modeling. Less serious works can be encountered in the popular press and other mass media that cater to folk linguistics and generally nonempirical views of language phenomena.

In the course of more than three decades, all sorts of statements have been made regarding the nature, mechanisms, and worth of using two languages in a single conversation or utterance. Such statements are usually based on a single preoccupation that is sometimes moral or prescriptive, sometimes descriptive. Examples of such preoccupations include allegations of "broken English, Spanglish, looseness of habit, linguistic insouciance or rebellion, and entrapment between two languages and cultures." However, more serious issues of culture and education frequently enter into the discussions of journalists, laymen, and educators. From still another perspective, those who object to the encroachment of American "culture" in Puerto Rico, for instance, seem to be resisting the inroads of American business and military interests through the vehicle of language (Varo, 1971; Narvaez, 1976; Palma, 1979).

Some of the objections to bilingual usage by Hispanic youth in America, namely Chicanos, Cubanos and Puerto Ricans, are derived from an implied connection between bilingual usage and low levels of language skills. It may well be, however, that code-switching is an independent circumstance that occurs along with, not because of, educational underachievement in many Latino youth from working class backgrounds.

There is also a wide range of serious scholarship regarding intercalation, or language mixing. Mackey (1965) has been quoted as viewing the phenomenon of language mixing as "an extreme instance of language interference." Perhaps related to this view, it also has been noted that many middle class or educated speakers view mixing languages as taboo, so that they deny it or are otherwise "reluctant to recognize its existence" (Gumperz and Hernández-Chávez, 1975:155). Whether denied or deprecated, language intercalation exists, often independently of language interference (which itself involves a controversy we will treat briefly below).

Important studies of the phenomenon by Lance (1969, 1975) have now become classic. In those works, some of the main issues to emerge from the literature were made explicit:

1. that intercalation is probably universal;
2. that it is situationally constrained, mostly to informal contexts;
3. that bilingual ability of both interlocutors is assumed;
4. that switching out of need or lack of ability makes up only a small portion of intercalated usage;
5. that accessibility, nonetheless is somehow involved (perhaps related to situation, style, or topic);
6. that there are no syntactic restrictions as to where switching occurs;
7. that there is no tendency to go in one language direction or another in the switch (Lance, 1975:138-144).

Thus the intercalation of languages was recognized early as widespread, nonaberrant, structured, and interdependent with situation, style and syntax. An additional contribution by Lance was the clear delimitation of areas for further investigation. Ironically, some of this very research in turn has seriously questioned certain of his original assertions, especially item six above regarding syntactic restrictions. In that regard, several investigators have sought to prove that certain switches are "ungrammatical" as judged by native interlocutors. But they have failed to make a convincing case, largely due to the problems of artificially constructed data and respondents' elicited judgements, both of which preclude the accurate appraisal of what might or might not occur naturally. In fact, many syntactically "prohibited" sequences turned out to occur in naturally collected data (Pfaff, 1976; and especially in Pedraza's data from Centro de Estudios Puertorriqueños, CUNY, as analyzed by Poplack, 1979). And so, just as Lance erred in posing no restrictions, so too, Gingras (1974), Timm (1975), and Gumperz (1976) were mistaken in posing too many syntactic limits on linguistic intercalation.

It was Poplack, elaborating a notion hinted by both Cornejo (1973:81) and Lipski (1977), who formulated the "equivalence constraint" an important notion regarding limits on the syntax of what may be switched. This concept expresses the idea that grammatical similarity at the switch point is the only restriction on intercalation for linguistic units at the word level or larger units (Poplack, 1978, 1979). In spite of this conceptual advance, there are controversies over what constitutes a "true switch" for units smaller than the word (morphemes, phonological and suprasegmental features) and indeed, even for single word switches. This controversy itself is healthy, for it strains the limits of analytic power of any proposed model.

Gumperz and Hernández-Chávez (1975:156) excluded some single "loan" words and brief isolated particles, such as sentence connectors and short exclamations, considering them below the threshold of legitmacy for switching. Yet by including such items, Poplack (1978, 1979) found that single item switches were more frequent in types of discourse that included out group members and that brief tag-like switches were the type of switch utilized by nonfluent bilinguals. Gumperz and Hernández-Chávez (1970:157) assert that "the greater part of instances of true switching consists of entire sentences," and that "examples of change within single sentences require special comment" (1975:157).

Yet, desregarding the dogmatism of "true switching," Poplack (1979) determined that the most complex kinds of switching were undertaken only by fluent bilinguals, and that these were in fact switches within, not between, sentences. Her findings also indicate that whole sentence switching is not the most frequent. These observations helped to formulate Poplack's (1979:53 ff) initial typology of tag, intersentential and intrasentential switching. This linguistic typology, however, neglected clearly important functional factors that include "linguistic form, interactional strategies and social meaning" (Gumperz and Hernández-Chávez, 1975:155f) that interpenetrate with the abilities of the speaker.

Other systematic observations frequently emphasize the functional motivation of switching, or intercalation, of language elements. These have been studied by various investigators (notably Gumperz, 1964; Gumperz and Hernández-Chávez, 1972; Timm, 1975; and Valdez, 1976), but with two seemingly insoluble problems. First, the reliance on personal or metaphoric ends as the motivating agent for intercalation places the researcher in the impossible position of determining the speaker's locutionary intent from the speech stream alone. Whether a switch was due to emphasis, mitigation, disavowal, focus on a topic, lexical need or other motivations becomes quite conjectural and subject to opposing or multiple interpretations. Related to this indeterminacy is the second problem—actually a retreat from the problem of intent—that of randomness. Some early researchers thought that ". . . the use of such curious phenomena . . . has no fixed limits and cannot follow regular laws" (Espinoza, 1917). Espinoza further concluded that there is "no great value for the philologist in collecting examples." George C. Barker (1947, 1950), the pioneer ethnographer of Chicano language, also felt that bilingual alternation occurs "without apparent cause." More recently others have repeated the randomness judgement, oblivious to the theoretical issues of (1) the status of the switch (whether it is a loan word in the language or an intrusion from another language, (2) the types involved, and (3) the linguistic mechanisms that are operative in such phenomena. But advances in systematic research have proved the randomness assertion wrong, and contrary to earlier views, the linguistic value in studying bilingual intercalation has been clearly demonstrated.

It is now recognized that intercalation is regular, and many types and formulations of possible rules governing the phenomenon have been proposed. This is perhaps the source of scientific excitement and interest in bilingual intercalation, aside from its human implications regarding attitudes, cultural solidarity, and education. But before turning to some of the rules and hypotheses advanced about intercalation behavior, it may be worthwhile to review a few other traditional views of switching.

Once it is admitted that intercalation may occur without interference, error, or randomness, further issues remain. For instance, "Has the speaker changed grammatical systems in mid-sentence, or has he merely inserted a word from the other language?" (Peñalosa, 1980:59). This question neatly summarizes the crux of recent inquiry, for in it are compressed the problems of typology, "true switch", the linguistic preoccupation with structure, and the mostly inscrutable question of psychological intent. Peñalosa identifies and ranks a number of related phenomena: interference, borrowing, code-switching, and *pochismos*, without formally offering a typology. (But he acknowledges the need for such a typology indicating that it would necessarily be multidimensional, including speakers, contexts, time, as well as the performance features of utterances by single speakers.)

"Interference" is merely a term from second language learning, and refers to speech errors related to processing new features through the speaker's established grammatical or phonological systems. The notion of interference as a miscue or mistake is perhaps the source of the connection between language switching and language inability. The idealized and prescriptive basis of such a notion becomes clear through a close reading of the texts that demand "vigilance," conscious "control" of choice, and avoidance of "abnormal" situations derived from "indiscriminate" use of both languages. The thrust of many descriptive studies has been precisely that through control and discriminate use of both languages some bilingual speakers engage in profoundly complex switching. While it is true that language learners may switch because they do not have mastery of every feature in their second language, it is also true that speakers can switch from their first language, and that others can switch between two languages that are equally well mastered. Hence, interference cannot account for all intercalation.

Borrowing, on the other hand, is often related to single items that have external cultural referents or that may involve units of speech such as formulae or idioms, e.g., "right on the money", or "memory bank." But this notion of formulaic switching also seems to be a less then satisfying way to account for usage such as "I like them *chiquito(s), pero grande(s)* I don't wanna see them" (said of sharks caught in Sheepshead Bay, N.Y.), where Spanish involving a contrast (small, but large) enters the sentence and crosses a phrase boundary. On the other hand, borrowing, not code-switching, may be the best explanation for monolingual Anglo usage of words such as burrito or crepe. Borrowed words regularly become incorporated into habitual speech patterns and dictionaries, again presumably distinguishing them from switches.

In the many attempts to typologize switching in the literature, authors frequently emphasize either social circumstances (that is, variables of situation or participants), linguistic structure (various sizes and kinds of linguistic units), or psychological motivations (the emotional, intentional or stylistic rationale for what a speaker chooses to do in bilingual performance). Some of these approaches may be conveniently tabulated, with functional factors of culture and society on the left, psychological motivation on the right, and with linguistic output itself in the empirical center. Such a tabulation is given in Table 1.

TABLE 1

VARIOUS TYPOLOGIES OF INTERCALATION

CIRCUMSTANCE		STRUCTURE				PSYCHE	
	Context	Sentence	phrase	tag	word	need	style
Barkin 1976						Connotative	mechanical
Gumperz 1964	situational					metaphorical	
Lance 1969	quotation	phrasal			single		
Timm 1975		....	inviolable VP		....		
Jacobson 1977			ethnicity		domain culture	unequal control	emotions
Gumperz and Hernández Chávez 1969	speaker setting pragmatic norm						
McClure 1977	code changing						code mixing
Poplack 1979		inter-sent.	intra-sent.	tag	intra-sent.		

Note that Table 1 does not exhaust the typologies of switching that have been offered, and only cursorily indicates some of the arguments of the writers cited.

Many attempts at typologizing have been eclectic, mixing circumstance, structure, psychological motive and even language used. For instance Pfaff (1975) submits that a switch type exists that is found mainly in Spanish discourse, characterized by loans and intersentential switches, and is slightly more formal than intrasentential switching. Timm (1975:475) indicates that a topic related to the barrio is habitually uttered in Spanish, and that a switch to English refers to detachment, conflict, etc. McMenamin (1973, 1978) timed and counted switches in California and found age of speaker and language of the switch to correlate. Older persons only switched out of English. But these conclusions may be valid only for the data studied by a particular researcher, and may well have less typological value.

Wald (1981) has hypothesized that the most fluent language of a speaker may be indicated by the language that is easiest to switch out of. That is, a person who is more fluent in English will be able to switch out of English into Spanish with less hesitation than he or she is able to get into English from Spanish. Why should it be harder to switch into the language one knows better? The answer to that question might give an important clue to the grammatical nature of switching.

In successive attempts to fathom code-switching, Shana Poplack, working with colleagues at the Centro de Estudios Puertorriqueños and the Centre de Recherches Mathematiques, has elucidated a great deal about the linguistic aspects of code-switching. After refining the syntactic notions of permissible and nonpermissible switch points with the equivalence constraint mentioned earlier, Poplack (1979) offered a typology that correlated the grammatical complexity of the switch with the speaker's knowledge of both languages. These findings, coupled with Wald's hypothesis regarding fluency, yield an interesting view. Briefly, it is claimed that a bilingual who knows one language better will more fluidly switch out of the language known best because his/her grammatical control will present more accessible points (or more thoroughly known grammatical junctures) at which the second language may be entered. On the other hand, when speaking the lesser known language, hesitation at switch points will occur because the exit points where the two languages interface will not be so thoroughly known. This hypothesis may become useful in the topological model that the present paper hopes to contribute.

A further breakthrough in the linguistic understanding of code-switching needs to be introduced as a context for the present paper. Although Poplack's (1979) typology (1) purposely ignored circumstantial and psychological factors, (2) accounted only for certain switches deemed legitimate, necessarily excluding other forms of intercalation, and furthermore (3) did not account for the processes of interpersonal triggering of switching in conversation, nonetheless that work led to the tentative determination of the mathematical probabilities of several phrasal subtypes of intrasentential switching (Sankoff and Poplack, 1980). In contrast to Barkin and Rivas' (1980) transformational view that switching necessitates a language-of-the-constituent to be inserted in the structural derivation of the sentence, Sankoff and Poplack made it clear that code-switching has its basis in surface structure. This implies that even in complex switching behavior, two grammars, not a single fused grammar or a third system, are operating at the interface between them.

The mathematics used in that model, however, is basically linear, calculating rates and ratios between switch rates. An additional constant, one that "will change from situation to situation, and from speaker to speaker" (Sankoff and Poplack, 1980:38), is required to derive actual rates in discourse from the hypothetical ones, and remains as yet unspecified. To require such a constant indicates to the present writers (1) that the most crucial factors in actual intercalation behavior are being covered, not explained, by the postulated constant, and (2) that a higher type of mathematical analogy is required in order to include the multidimensional concerns of speaker competence, conversational interaction, context, topic, and perhaps even the mentalistic imponderables of psychological motivation and intent. The unspecified constant seems to be not only complex, but also the most theoretically interesting area for further specification of what actually occurs.

We believe, then, that more than one variable is needed to describe the processes of intercalation, and that the topological notion of catastrophe looks promising as a means to model the various factors that influence the instantaneous use of language or, more precisely, language elements. Using catastrophe theory, a case may be made that under some conditions the very same external circumstances may yield an utterance or constituent switch from one language, and soon thereafter the same kind of switch occurs from the other language. This structurally broad analysis of wide ranging, sometimes rapid, and often emotionally charged intercalation of linguistic features—not only words and phrases but also more microscopic units (morphemes, phonemes, suprasegmentals) and macroscopic units (gestures, exchanges, entire speeches and conversational events)—thus attempts to address the abstract complexity and the rich concrete process of intercalation. It is hoped that eventually the topological model will provide further evidence that the intercalation of languages is a complex, resourceful and normal process of bilingual interaction, and also offer greater understanding of "the very center of the Chicano (and other Latino, at least) sociolinguistic experience" (Peñalosa, 1980:6).

A GENERAL TOPOLOGICAL MODEL

Given the issues discussed in the previous section, there is a clear need to develop a general model that will attempt to integrate the various factors that have been identified as operative in bilingual intercalation behavior. Such a model is possible if fairly careful attention is given to the clarification of relevant concepts, definitions, and assumptions, and if a nonlinear mathematical treatment is invoked. This section attempts to show the general outline of such a model.

Concepts, Definitions, and Assumptions

As already seen in the previous section, there are many possible definitions of bilingual intercalation. Quite a few of those definitions, however, seem arbitrary because they tend to be overly restrictive as to what is considered "true" or "real" intercalation. Unfortunately, this emphasis on the "real" tends to discard language mixing that, on the face of it, appears to be little different from the examples that are given the status of "real" instances of intercalation. Moreover, there is a need to define bilingual intercalation in such a way that the definition will be applicable to various units of linguistic analysis.

Consistent with this viewpoint, we define bilingual intercalation as *the* *mixing of elements from one language with elements from a second language within a framework of intelligible communication.* Symbolically, this definition can be depicted as follows:

$$L_1 \ldots xL_2 \ldots xL_1 \ldots$$

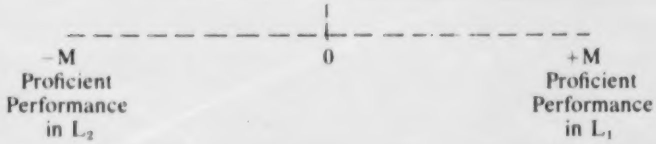
where

L_1 = specified element(s) of language 1
L_2 = specified element(s) of language 2
x = point of transition
. . . = on-going discourse

There is also a need to specify what constitutes bilingual speech behavior. We consider such language performance to be a real variable P that can vary from $-M$ to M with the following interpretation: If P is equal to or very near $-M$, P will represent proficient speech performance in the second language (L_2); if P is nearly equal to M, P will represent proficient speech performance in the first language (L_1); while P near 0 will indicate essentially the absence of verbal communication. Intermediate values of P might indicate halting, stammering, circumlocuting, or merely slight pauses in speech, etc. in either L_1 or L_2. Thus a particular language performance, at a given linguistic unit of analysis, will be in either one language or the other and at a specifiable degree of proficiency. Figure 1 is a graphic representation of the variable P.

FIGURE 1

Range of Variable P, Bilingual Speech Behavior



As discussed in the first section of this paper, past research in bilingual intercalation behavior has tended to exhibit confusion as to the specific linguistic units of analysis under consideration. Moreover, conclusions reached on the basis of a particular level of analysis (say phonology) have not been related systematically to other conclusions drawn from different levels of analysis (say syntax). Worse yet, sometimes conclusions drawn from one level of analysis have been inappropriately generalized to other levels. For example, the notion of "interference," derived mainly from studies at the phonological level, has been overgeneralized to the lexical level of analysis, and, in the extreme case, to the entire phenomenon of bilingual intercalation.

The proposed topological model can be applied to various linguistic units of analysis. However, a particular application of the model must specify a unit of analysis. The allowable units are fairly conventional and are shown in Table 2.

TABLE 2

UNITS OF LINGUISTIC ANALYSIS

Type	Symbol	Description
1	F	phonemic
	M	morphemic
	L	lexemic/semantic
	G	syntactic
	S	suprasegmental
2	D	pragmatic/discourse

The units of analysis have been divided into two categories (types one and two), largely to preserve the idea that type one units have to do with language as a medium while the type two unit might be equated with the message or information that is conveyed through the medium of language.

Another source of confusion in the research literature has to do with a lack of specification as to the locus of the intercalation behavior. There is a clear and obvious site for the locus of intercalation: the speaker. In this case, the context for linguistic analysis is idiolectal. However, investigators often have tried to relate such behavior to the phenomenon of language change and variation. Such emphasis shifts the context of analysis from idiolect to dialect, i.e. from individual to group use of language. In theory, there appears to be no reason why one should not be able to relate intercalation behavior to macrolevel language processes. However, one has to be careful about the differences in the time scale, among other variables, that the different contexts imply. Individual processes occur within the lifetime of a single individual, while general language processes develop over longer periods of time, usually several or more generations. These points can be generalized by suggesting that bilingual intercalation behavior can be analyzed within a specifiable context (locus) and either synchronically or diachronically. Table 3 summarizes these considerations.

TABLE 3

TIME AND CONTEXTS OF BILINGUAL
INTERCALATION BEHAVIOR

	TIME	LOCUS
	Ideolect (individual)	Dialect (group)
Synchronic	current performance	current usage
Diachronic	growth, dev. and change	language change

The topological model proposed requires the specification of both input and output variables. In a strict sense, only one output variable is required. This variable has already been identified as behavioral variable P, a variable that describes linguistic performance in either L_1 or L_2. Note that this variable can be applied to any of the linguistic units of analysis shown in Table 2 (and any of the contexts shown in Table 3). Consequently, in order to avoid confusion as to the unit of analysis under discussion, the variable P should be subscripted to indentify a specific unit of analysis. Thus, P subscripted with F would be the output variable for application of the model at the phonological level. Concretely, this would mean that the output of intercalation can be modeled differently for speakers with say, varying degrees of accent from those with varying degrees of control of syntax.

The identification of input variables must consider the presumed driving factors that account for bilingual intercalation behavior. As discussed in the first part of this paper, past research has shown that the following factors are thought to be associated with bilingual intercalation:

1. the speaker's proficiency in L_1 and L_2,
2. the speaker's preference for using one language over the other,
3. inherent constraints in L_1 and L_2 individually or in conjunction,
4. environmental restrictions on the use of L_1 or L_2.

In order to derive input variables from these postulated factors, it is necessary to make further clarifications. For example, it is assumed here that observed language proficiency is related to several underlying variables. One of these variables is the accessibility that a speaker has for a particular linguistic element at a given moment. Such accessibility can range from very low to very high, implying that at low levels of accessibility language performance will be correspondingly low, while a high level of accessibility implies a high level of performance. Note that by postulating this variable language performance (and proficiency) is subject to wide variation from moment to moment. This view of performance seems to be quite reasonable since individuals do not appear to maintain identical levels of performance from instant to instant.

The other factors listed above are fairly straight forward, since they deal with phenomena amply documented in the literature. It is clear that a bilingual speaker may choose one language (or linguistic unit) over another, that not all possible combinations of words in a given language are permissible, that two different languages are not entirely translatable, and that the social environment can restrict or even prohibit the use of a particular language. Table 4 summarizes the input and output variables that will be considered by the proposed topological model.

Only five distinct input and output variables are proposed in Table 4. The term "endogenous" in the present context refers to variables that reflect the speaker's abilities or inclination, while "exogenous" refers to variables that produce their effects through the speaker's environment or by virtue of the characteristics of the particular language(s) used. The topological model proposed in this paper will attempt to account for the behavior of these variables.

Catastrophic Behavior

Catastrophe theory consists of a branch of mathematics generated largely by the French topologist Rene Thom (1972), and applied with varying degrees of success by such individuals as British mathematician Christopher Zeeman (1974, 1976) and American biophysicist Alexander Woodcock (1978). At the risk of oversimplifying the results of catastrophe theory, a catastrophe model is a means of mathematically explaining how discontinuities (sudden jumps) can occur as the result of continuously changing causes (input variables). Examples of models using catastrophe theory range from very con-

TABLE 4

INPUT AND OUTPUT VARIABLES FOR BILINGUAL INTERCALATION BEHAVIOR

Category	Type	Symbol	Description
Input	Endogenous	A	Accessibility to the speaker of the required language unit. Must be subscripted to define a specific language unit of analysis.
		p	Speaker's preference for using one language over the other.
	Exogenous	B	Environmental restrictions on the use of L_1 or L_2
		T	Inherent constraints in the use of L_1 and L_2 individually or in conjunction.
Output		P	Language performance in L_1 or L_2; must be subscripted to define the unit of analysis.

crete physical models that explain phenomena such as the collapse of a bridge or the buckling of a beam to highly qualitative models describing the collapse of the stock market or the eruption of a riot. The above mentioned "discontinuities" seem to take on the aspect of disasters. However, it is important to point out that the term "catastrophe" was coined by Rene Thom, and the connotation of the word catastrophe in French is closer to "a sudden jump" than to a calamity. To think of the intercalation of languages as a pedagogical catastrophe or disaster in the sense common to English is, of course, totally inappropriate. Clearly, the "catastrophe" observed might well be a switch from proficient speech behavior in one language to proficient speech behavior in a different language.

Thom's main theorem shows that there are only seven "essentially" different types of catastrophe models that can be developed if the number of "control" variables is less than or equal to four, and (with the exception of the relatively trivial "fold" catastrophe) all consist of models that embody organizations of the basic "cusp" catastrophe.

Zeeman, in several models that he has developed using the cusp catastrophe, repeatedly points to three characteristics of the behavior to be modeled that are indicators of the appropriate application of the cusp catastrophe model. These characteristics are:

1. sudden reversals in behavior,
2. a divergence effect in which a change in the control variables will produce resultant behaviors that cannot be predicted by the experimenter,
3. a bimodal characteristic, in which, under certain values of the control variables, the distribution of expected behaviors follows a bimodal distribution.

The first characteristic refers to behavior that is generally continuous and changing but exhibiting sudden and radical variation. A behavior is said to vary continuously when small changes in the variables that cause the behavior lead to small changes in the behavior variable. A behavior is said to undergo sudden reversals when, under certain conditions, small changes in the variables that cause the behavior lead to radical changes in the behavior variable. For example, Zeeman's model of the stock market indicates that speculation and demand are variables that affect the behavior of the stock-market. Gradual decreases in demand will decrease, but only gradually, the behavior of the stock market (Dow-Jones averages, for example). However, if the demand continues to decrease and speculation remains at a high level, then a sudden "crash" will occur resulting from a very small decrease in demand. The model indicates that at a slightly higher demand level, the size of decrease in demand would have little effect on the Dow-Jones average. Similarly, in Zeeman's model of the fight-flight syndrome, if the animal is in a highly excited state (high rage and high fear), a slight increase of fear will generally have little effect on the animal's attack behavior. However, at some point in the fight and flight variables, a slight increase in fear, or a slight decrease in rage, will cause the animal suddenly to cease attacking and flee. These examples thus illustrate what is meant by sudden reversals of behavior.

The second characteristic, divergence, is best explained by considering other aspects of the examples already given. In the case of the stock market, if there is a gradual increase of "speculation" to a high level while demand continues at a moderate level, the eventual result may well be a very high or very low Dow-Jones average, but the actual result will be virtually unpredictable. Similarly, if the emotional state of the animal in the second example is excited by increasing rage and fear nearly equally, the animal is likely to exhibit either an attacking behavior or a fleeing behavior, but which behavior actually will occur is virtually unpredictable. This characteristic of unpredictability of outcome under certain conditions of the controlling variables is what is meant by "divergence effect".

The third characteristic, that of a bimodal distribution of behavior, is perhaps easier to understand than the other characteristics. In the stock market example, high speculation and moderate demand generally lead to a stock market that may be very high (bull) or very low (bear), but it is not likely to result in an intermediate average. In the fight-flight example, if the animal is in a state of high rage and high fear, the behaviors of attack and flight are most likely, but the intermediate (neutral, passive) behavior is least likely. Figure 2 shows an example of a bimodal distribution based on fight-flight behavior. A postulated bimodal distribution of bilingual speech performance is discussed in a separate section below.

Figure 2a. Bimodal distribution of behavior with high rage and high fear.

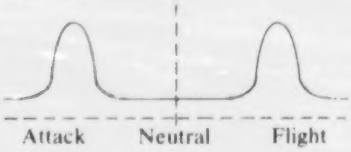
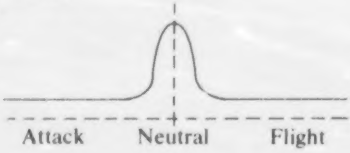


Figure 2b. Distribution of behavior with low rage and low fear.



The cusp catastrophe consists of a mathematical model in which the value of a behavioral variable x is determined at any time by the value of the variables a and b, called control variables, and by the "history" of the preceding values of x. Mathematically, the value of x is determined to be a locally minimum value of the potential function:

$$V = x^4 + ux^2 + vx$$

where u and v are functions of control variables a and b. Figure 3 represents a sketch that indicates the values of x that result from this procedure. The graph consists of a surface that sits above the (a,b) plane (the a,b plane is projected in Figure 3), with the height of the surface above the point a,b representing the value of the behavioral variable x corresponding to the point a,b. A careful analysis of Figure 3 shows that for some values of a and b there is only one value of x corresponding to that combination of values. However, there is a cusp-shaped curve in the (a,b)plane (called the catastrophe set) where there are exactly two possible values for x. Moreover, there is a third region in the (a,b) plane, inside the cusp, for which there are three possible values for x. Actually, in this region the "middle sheet" of values for x represent values that maximize rather than minimize V. Consequently, these values represent "least likely", rather than "most likely" behavior. When there is only one value of x corresponding to a particular value of a and b, x will represent the value of the behavioral value determined by a and b. If there are two possible values of x, we will assume that the values of the control variables were reached by means of a continuous path in the (a,b) plane. Correspondingly, a unique path on the surface exists that "covers" (or sits above) the path in the (a,b) plane. This path ends at the point whose x-value represents the behavior predicted by the model.

When it comes to creating a model that will actually generate numerical output, however, the particular catastrophe surface must first be determined. One procedure that might be used, when both the control and output variables are easily measured, would be to conduct a large number of experiments and analyze the data by finding the best fitting catastrophe surface. A second option, however, is to treat the parameters for the model as variables, and to identify how these variables may reflect varying conditions surrounding the phenomenon that we are modeling.

The parameters that need to be specified include at least the width of the cusp, the orientation of the centerline of the cusp, and the location of the vertex of the cusp. Table 5 summarizes these variables.

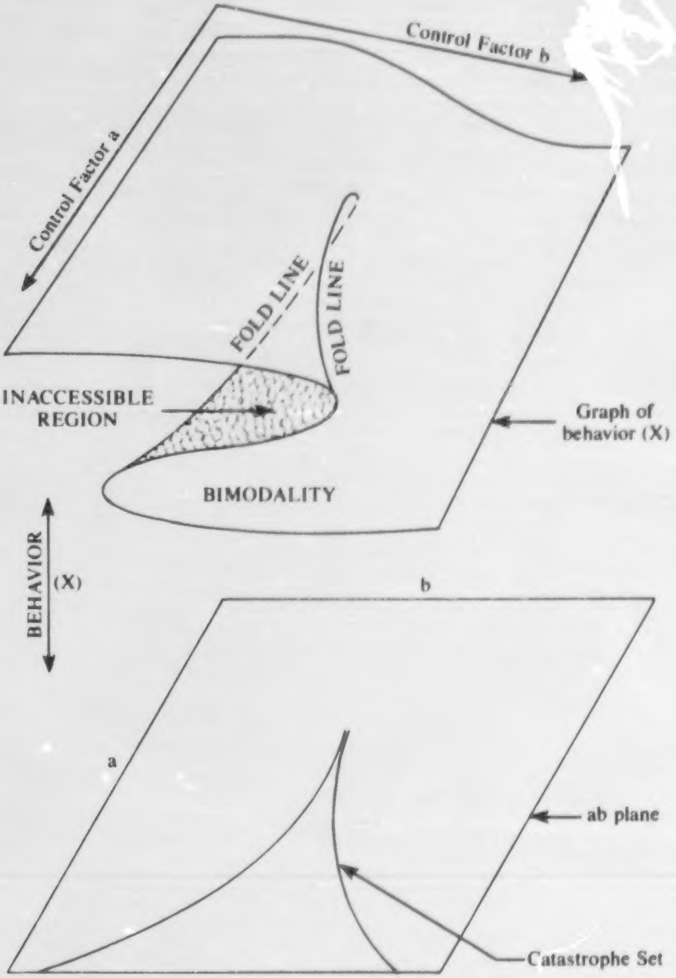
The next section will show how these cusp catastrophe parameters can be interpreted as the input and output variables affecting intercalation behavior (see Table 4).

A Catastrophe Model of Intercalation

In the case of a model for bilingual intercalation, we designate verbal behavior by the variable P (performance). The characteristic of sudden reversal of behavior can be seen as the very phenomenon that we are at-

FIGURE 3

Graph of the Typical Cusp Catastrophe.


Control Factor b
Control Factor a
FOLD LINE
FOLD LINE
INACCESSIBLE REGION
Graph of behavior (X)
BIMODALITY
BEHAVIOR (X)
b
a
ab plane
Catastrophe Set

tempting to model. Cases of intercalation by a fluent bilingual will generally involve a switch from values of P very near M to values very near −M, although switches at intermediate values will also occur.

The characteristic of divergence can be seen by observing that a bilingual speaker who is highly proficient in both languages and who is in an envi-

TABLE 5

PARAMETERS OF THE CUSP CATASTROPHE

Variable	Geometrical Interpretation in the Cusp Catastrophe
a,b	control variables
w	the "width" of the cusp
s	the slope of the centerline
c,d	the a,b coordinates of the "vertex" of the cusp

ronment that is equally accepting of either language is nearly equally likely to begin speaking in either language. There does not seem to be a reasonable way to develop a mechanism for predicting which language would be used in this situation. Hence, the divergence effect appears to be demonstrated.

The third characteristic can be seen in that a highly proficient bilingual will exhibit language behavior with modes near $-M$ and M, with behavior near zero occurring rarely. It is reasonable to postulate that when a language element is highly accessible in both languages for any speaker the most likely distribution of behaviors will be bimodal with modes near M and $-M$. On the other hand, if an element is not very accessible to the speaker in either language, a unimodal distribution of behavior clustered near zero is most reasonable to expect.

To model exactly what is happening in intercalation behavior, we would need to monitor how all of the control variables influence the ingoing electrical input signals and the exact equations that indicate how the brain converts these input signals into output signals. Such a sophisticated model seems unattainable at the present time. However, Thom's theorem shows that the existence of such underlying equations guarantees that some catastrophe model is appropriate. Furthermore, the higher order catastrophes all involve the cusp catastrophe. Thus, we have concluded that a model involving the cusp catastrophe is the appropriate place to begin. Consequently, we set forth the following catastrophe model.

The behavior variable, as indicated above, is the variable P (performance), that varies from $-M$ to M. An instance of intercalation, therefore, will be indicated by a change in the sign of the variable P. The control variables for the model will consist of a combination of the variables corresponding to accessibility and the speaker's language preference, if any.

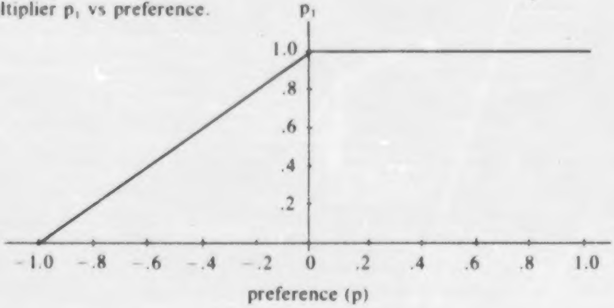
Accessibility is assumed to be a two dimensional variable a_1 and a_2 where a_i refers to the accessibility of a language element in language i. For purposes of modeling, we assume that a_i—accessibility of a specified element in language i— is a random variable, changing according to some convenient distribution whose mean or median is approximately determined by the proficiency of the speaker in language i. In the case of a bilingual person, we will assume that the accessibility of elements in each language varies from 0 (completely inaccessible) to 1 (perfectly accessible). We also assume that a_1 and a_2 are independent of each other. We can incorporate speaker preference by allowing p to be a real variable that goes from -1 to 1, where -1 represents determination by the speaker to speak language 2, 0 represents indifference, and $+1$ represents determination by the speaker to speak language 1. We then derive two multipliers: p_1 which is equal to $1+p$ if p is negative, and to 1 if p is greater than or equal to 0; and p_2 which is equal to 1 if p is less than or equal to 0, and to $1-p$ if p is greater than 0. The control variables then become a_1p_1— the product of a_1 and p_1— and a_2p_2 (see Figure 4). In the absence of environmental bias favoring one of the languages, the model will be a cusp catastrophe with splitting factor $a_1p_1+a_2p_2$ and with normal factor $a_1p_1-a_2p_2$. A two dimensional sketch of the control space and its predictions is shown in Figure 4. Values of a_1p_1 and a_2p_2 in the lower right of the control space will result in performance only in language 1, and in the upper left only in language 2. Such situations indicate expected behavior when the accessibility of an element in one language is much greater than that of the corresponding element in the other language. The area within the cusp is the bimodal area, and the prediction of the model is that, in the indeterminate case, the behavior will not be intercalation i.e., the behavior will be to maintain performance in the language in which the speaker has been performing.

At this point, we see that the width of the cusp can be considered as a variable in the model. This variable is designated as t in Figure 5. If the value of t is large (close to 1.0), the bimodal region is greatly diminished and it becomes relatively easy for intercalation to occur, whereas if t is

FIGURE 4

Graphic Representations of Multipliers p_1 and p_2 as Functions of Speaker's Language Preference, p.

a. Multiplier p_1 vs preference.



b. Multiplier p_2 vs preference.

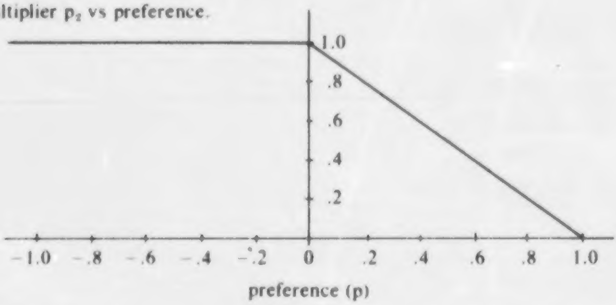
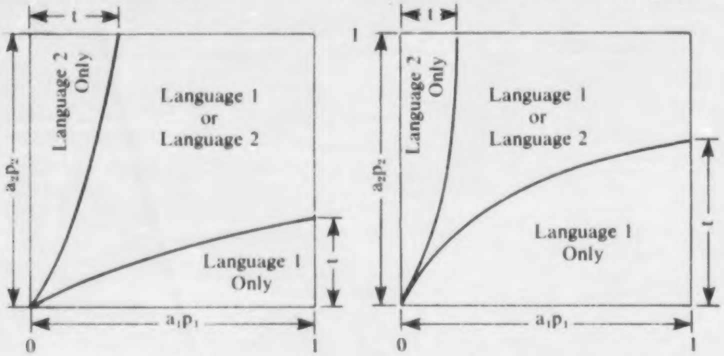


FIGURE 5

Diagrams of Control Space for Cusp Catastrophe in the Bilingual Intercalation Model.



a. No environmental bias.

b. Environmental bias in favor of language 1.

small the bimodal region becomes very large and intercalation becomes highly unlikely. In consideration of some of the research of Poplack and Sankoff, it may be that the variable t approaches 1.0 at points of discourse where intercalation is permissible, and that it approaches zero at those points where intercalation is not permissible. Moreover, the model may be able to incorporate Wald's hypothesis of differential facility in switching from one language to another if it is assumed that the value of t that determines the width of the "language 2 only" region is distinct from the t that determines the height of the "language 1 only" region (see Figure 5a).

Finally, the axis of symmetry of the cusp (actually the selection of the normal factor), can be seen as an indication of environmental bias or restriction in the use of one language or the other. A rotation of the axis in a counter clockwise direction will lead to a model that predicts that an overabundance of linguistic behavior will occur in language 1, while a clockwise rotation would similarly favor language 2 (see Figure 5b).

In summary, Table 6 shows the input and output variables needed to model intercalation behavior (see also Table 4), the variables allowable in the cusp catastrophe model (see also Table 5), and the correspondence between these two sets of variables.

So far, we have only considered the vertex of the cusp to occur at the origin, corresponding to a simultaneous value of zero for the two control variables. However, the cusp catastrophe model in itself does not dictate this restriction. It should also be pointed out that the model proposed does not account for intercalation behavior that may be due to speech impairment resulting from various pathologic conditions, such as disease or trauma.

CONCLUSION

Given the proposed topological model of bilingual intercalation, there appear to be two principal directions in which to proceed. One promising line of activity is to develop a computer simulation of bilingual intercalation

TABLE 6

CORRESPONDENCE OF BILINGUAL INTERCALATION INPUT AND OUTPUT VARIABLES TO CERTAIN VARIABLES OF THE CUSP CATASTROPHE

	MODEL		MEANING
	Cusp Catastrophe	Bilingual Intercalation	
Input Variables	a,b	a_1p_1, a_2p_2	Accessibility to the speaker of elements in language 1 and 2, weighted by the speaker's language preference (p), if any.
	w	t	Constraints inherent to language 1 and 2 and their joint use.
	s	B	Environmental restriction on the use of language 1 or 2.
Output Variable	x	P	Intercalated bilingual speech behavior in a specific unit of analysis.

based on the input and output variables identified. We have begun some preliminary work in this area and hope to develop it further in the future. A second line of activity would be to engage in empirical work to see if the input and output variables we have identified are in fact operative in the real world. It would be quite useful to have empirical data as a guide for determining the actual shape and position of the catastrophe surface. Moreover, we are quite aware of the fact that the cusp catastrophe allows for only two control variables, whereas the phenomenon of intercalation may in fact require more control variables, thus forcing the use of a higher order catastrophe model.

Finally, it is our hope that the further development of a theoretical model, together with greater refinement in data collection and analysis, will lead to a much fuller understanding of a language phenomenon that, for all the attention and concern it has generated, so far has remained largely a mystery.

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ED212163

A FRAMEWORK FOR THE ANALYSIS OF BILINGUAL EDUCATION PUBLIC POLICY IN THE U.S.*

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In recent years it has become increasingly clear that there is a need to construct a framework for the analysis of bilingual education public policy in the United States. Such a framework is necessary because the formulation of bilingual education public policy in this country ought not to be guided solely by erratic quadrennial efforts to exchange meager and hard won political tokens for congressional approval of Title VII of the Elementary and Secondary Education Act. On the contrary, the continuation of bilingual programs ought to depend primarily upon the existence of a well-articulated and firm national policy supporting bilingualism and bilingual education. Today such a national policy is but a hope for those who support bilingual education.

This state of affairs is particularly disturbing in view of the periodic reviews that Congress imposes on all legislation. Thus, it is plain that advocates of bilingual education must expend the intellectual and political efforts needed to produce the kind of bilingual education public policy that is desired. This paper is concerned primarily with the conceptual part of the intellectual task and aims to identify the gross parameters that are important to bilingual education public policy analysis.

PRELIMINARY ASSUMPTIONS

Some preliminary assumptions and definitions need to be made explicit. Throughout this paper it will be assumed that policy refers to public policy rather than policy in the private sector. Similarly, the interest in planning will be limited to those planning activities that are intended to carry out established public policy.

In a fundamental sense, public policy formulation can be viewed as a social process that culminates in the exercise of choice by a duly constituted political body. Typically a choice will be made from among competing alternatives relating to a specific social issue. The alternatives can vary both in their implicit and explicit outcomes. Moreover the alternative to take no action or to do nothing is almost always implicit within the set of available options. Reduced to its essence, public policy has to do with a process for making choices about what ought to be done, or not done, in specified

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situations. Public policy thus contributes importantly to the designation and legitimization of social goals and priorities. And it is precisely this legitimizing function of public policy that is important to bilingual education.

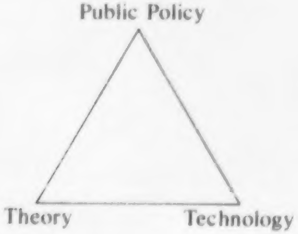
Planning is an activity that has a fundamental and logical connection to the policy-making process. Once social goals and priorities are established and legitimized through public policy, the planning process is invoked by the relevant public institutions in order to develop a logical, feasible, and satisfying action agenda. If carried out, this agenda will produce a variety of changes and transformations in the social and physical environments, and indeed in the very people who inhabit those environments.

ERECTING A METAFRAME

Given this understanding of public policy and planning, the required task is to construct a framework that will facilitate understanding of the processes involved in formulating bilingual education public policy in the United States. At the outset, it may be useful to erect a sort of conceptual scaffolding that will allow the construction of the desired framework in the context of a larger edifice. Consider this scaffolding as a metaframe that can be conceived as encompassing three interlocking components. These components can be designated as theory, technology, and public policy. Figure 1 shows schematically the three components. The metaframe proposed designates in a parsimonious way the elementary components that define and propel the bilingual education enterprise. Moreover, the basic idea depicted in Figure 1 is that both the formulation and analysis of bilingual education public policy should take into account explicitly the elements of bilingual education theory and technology, since these elements are important constituents of bilingual education as a whole.

FIGURE 1

Metaframe for Bilingual Education Public Policy.



Perhaps a brief mention needs to be made as to the meaning of theory and technology in bilingual education. Basically, theory in bilingual education has to do with the elaboration of conceptual and analytic frameworks for the purpose of describing, interpreting and understanding the essential underlying principles and elements of bilingual education. Applied theory can be used to analyze, explain, support, and change bilingual learning activities in the classroom as well as in natural settings outside the classroom. Hence, the advancement of theory in bilingual education is a basic necessity for the field as a whole. Unfortunately, one of several key problems currently facing bilingual education is a notable lack of attention to the construction of theories applicable to the numerous phenomena and events that occur in bilingual education. Nevertheless, the relevant point here is that public policy in bilingual education must necessarily affect, and is affected by, the relative level of theory development in the field.

The other component in the triad, bilingual education technology, implies procedures, techniques, materials, and instrumentation. In brief, bilingual technology includes all of the skills and paraphernalia that are utilized in the teaching enterprise. Much that is important to teaching and learning has to do with technique because technique is a key element in the formation of skills and patterned behavior. To the extent that teachers need and control skills, techniques, and technical products, they are technicians. As technicians they must be able to understand, utilize, and evaluate the growing technology that applies to bilingual learning and the management of bilingual classrooms and other learning environments.

The connection between bilingual technology and public policy is apparent if one sees that public policy issues often involve choices between technological alternatives as well as between philosophical or value alternatives. To the degree that the basic goals and ideas of bilingual education are supported by a technological base, there is always the possibility that competing technical systems will arise and that their effectiveness, usefulness, and desirability will have to be evaluated as part of the policy-making process. Moreover, technological products almost always give rise to questions of specifications and standards. Although such questions may require purely technical answers, when they arise in the public sector they almost always involve policy decisions as well.

ELEMENTS OF THE FRAMEWORK

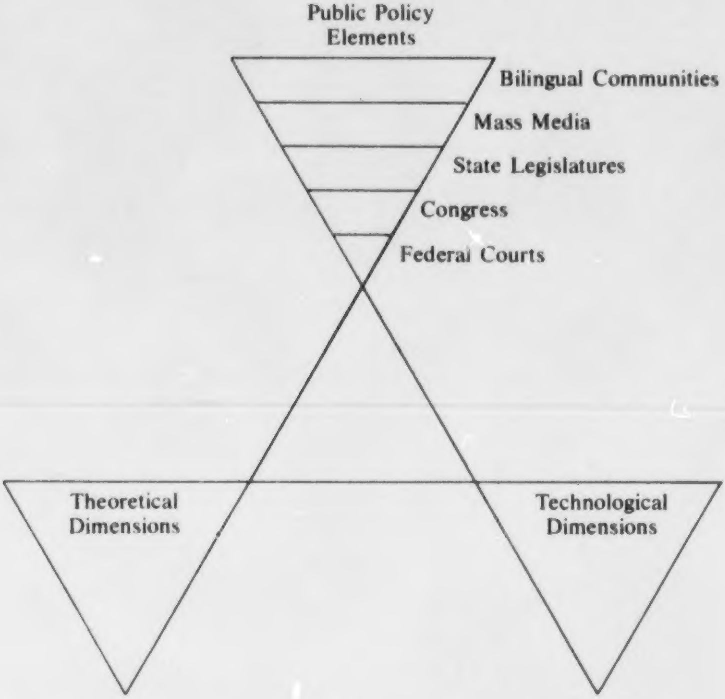
If the triad of components just described is accepted as a suitable metaframe, then some specific elements of the proposed bilingual education policy framework can be identified. In brief, these elements include the federal courts, the U.S. Congress, state legislatures, the mass media, and bilingual communities. Figure 2 depicts these elements in relation to the metaframe already described.

Now it should go without saying, but it may be worthwhile to emphasize, that the five elements selected form just one set of elements from an indefinite number of other possible sets that could be constructed. Yet, the suggestion here is that the five elements depicted in Figure 2 are comprehensive enough to encompass the full range of phenomena that need to be understood and manipulated in the area of concern. Such understanding, of course, will require that the dimensions or factors that are constituents of these elements be identified and gauged. It will be necessary also to determine how these dimensions relate to each other. In short, the perimeter of the framework and the manner in which it is held together must be known.

Although in a field as broad as bilingual education public policy a count of five elements is reasonably parsimonious, note that these elements arise from only three fundamental forces that are at play here. These are (1) the

FIGURE 2

Five Elements of Public Policy Framework Displayed in the Context of a Bilingual Education Metaframe.


Public Policy Elements
Bilingual Communities
Mass Media
State Legislatures
Congress
Federal Courts
Theoretical Dimensions
Technological Dimensions

political system that gives rise to a mechanism for making some of the important social decisions; (2) public attitudes, opinions, and perceptions that influence the outcomes of political processes; and (3) the activities of bilingual communities that ultimately are aimed at influencing both public attitudes and the outcomes of the political system.

Before going into more detail about the five elements that constitute the proposed framework, a few general comments are in order. First, it is proposed that the five elements are fundamental, and that they need to be understood in detail if an effective policy in bilingual education is to be formulated. Secondly, it is extremely important to recognize that there is scarcely any systematic knowledge about any one of these elements, and some elements have received hardly any attention at all. Thirdly, it is hoped that the proposed framework will serve a heuristic function by assisting in the design and implemention of a research agenda. Eventually the outcomes of such research ought to inform the actions of advocates and policy makers whose actions have the potential to affect the lives of thousands of school children. What follows is a brief outline of each element that is intended to signal its importance in public policy formulation and to assess, if only in a cursory fashion, our present level of knowledge of that particular element.

THE JUDICIAL ELEMENT

There can be little question as to the importance of the legal system and its influence on bilingual education activities. Indeed, the impact of the federal courts on the implementation of bilingual education programs has been pervasive, and in some cases the courts have been the decisive factor in determining rather specific public policy issues in bilingual education. So far, no single court case has had as powerful an impact on bilingual education as the *Lau* v. *Nichols*[1] decision of the U.S. Supreme Court in 1974. The decision was particularly significant in view of the "*Lau* Remedies" disseminated by the Office for Civil Rights as a direct result of the *Lau* ruling.

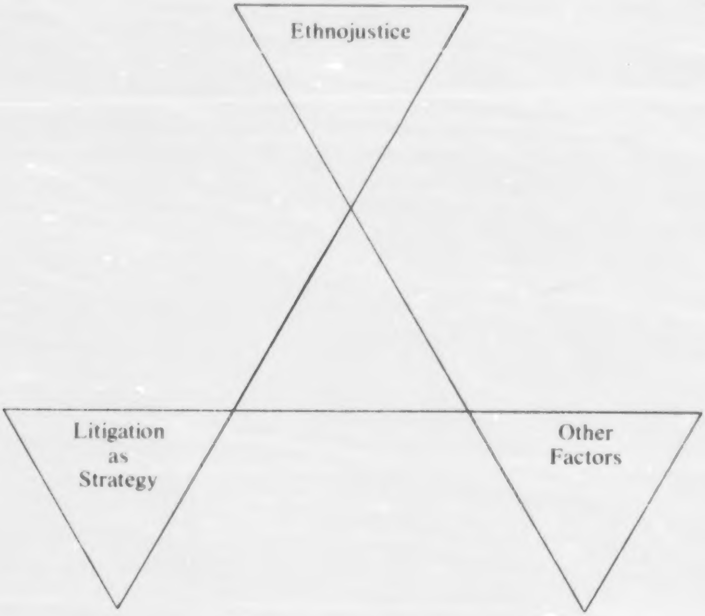
Curiously enough, the *Lau* decision did not specifically require a bilingual education remedy to the issues in question. Yet this case, which was directly concerned with issues of equity and nondiscrimination, has become a cornerstone of the public policy that currently supports bilingual education. This somewhat anomalous feature of the *Lau* decision ought to alert the advocates of bilingual education to the need to understand more clearly both the strengths and weaknesses of litigation as it affects the policy-making process.

Unfortunately. not a great deal of research has been done that can gauge with some precision and insight the many factors inherent in the litigation process or to place in proper perspective the influence of litigation in the formulation of public policy in bilingual education. One can identify, for example, at least two issues that need to be raised and researched. First, it is important for those involved in bilingual education to have a clear understanding of the impact that the litigation strategy will have on bilingual education outcomes. Court decisions tend to be directed at very specific situations, yet their impact often is extended far beyond the specific cases (and circumstances) originally litigated. A case in point, again, is the *Lau* decision, which originally affected only the San Francisco school district. Yet its general impact was felt throughout the country by way of both the *Lau* Remedies and the influence that the decision had on the federal Bilingual Education Act of 1974 and similar acts at the state level. Whether or not one gains an advantage from a particular court decision is not the point here. The important point is that the influence of court decisions can be widespread and pervasive, and that it is necessary to understand more completely how this influence will affect the overall field of bilingual education. It is only through such understanding that one can hope to accurately assess the effect of litigation on the larger public policy arena. To date, only a small number of researchers have done work in this important area. Particularly noteworthy is the work of Manuel del Valle and his colleagues at the Centro de Estudios Puertorriquenos.[2] Yet much more work of this type needs to be done.

A second factor in this element that needs to be elaborated has to do with what might be called "ethnojustice." Ethnojustice refers to the particular—and at times peculiar—influences that affect legal decisions because the litigation involves ethnically identifiable issues or questions. Ethnojustice also has to do with other factors that influence judicial outcomes. For example, the racial and ethnic background of judges, the climate of prevailing public opinion, and the legislatively enacted statutes within which issues must be adjudicated are all factors that influence specific court cases that ultimately may impact on the public policy arena. These factors, and others that still need to be identified, are depicted in Figure 3.

FIGURE 3

Factors in the Juridical Element Related to Bilingual Education Public Policy.



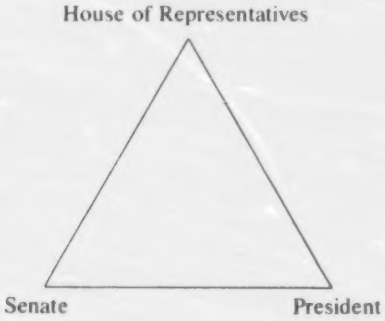
THE CONGRESSIONAL ELEMENT

Turning now to the legislative element at the federal level, federal public policy in bilingual education can be stated explicitly. As far back as 1968, the U.S. Congress declared it to be a policy of the United States to " . . . provide financial assistance to local educational agencies to develop and carry out new and imaginative elementary and secondary school programs designed to meet . . . (the) special educational needs" of children of limited-English-speaking ability.[3] Note that in this declaration of congressional policy no specific reference is made to bilingual education. It was not until 1974 that the Congress declared the following policy for the United States: " . . . in order to establish equal educational opportunity for all children (A) to encourage the establishment and operation, where appropriate, of education programs using bilingual educational practices, techniques, and methods, and (B) for that purpose, to provide financial assistance to local educational agencies, and to state educational agencies . . . "[4] The public policy enunciated by the Congress in 1974 was not substantially altered by the Education Amendments of 1978.

Yet, in spite of this fairly specific statement of congressional policy on bilingual education, a rather small, though significant, amount of research has been conducted to illuminate the myriad of factors that contributed to the formulation of this particular policy. Relevant research works, such as those by Gilbert Sanchez[5] and Susan Schneider,[6] are helpful in identifying important factors that led Congress to the formulation of this particular policy. Some of these factors are shown in Figure 4. As indicated by Schneider in her study of the Bilingual Education Act of 1974, the elements depicted in Figure 4 interact with each other and the environment in complex ways that have important ramifications for outcomes of the federal policy process. These interactions have been elucidated to some extent. Figure 5 attempts to highlight some of the more significant influences.

FIGURE 4

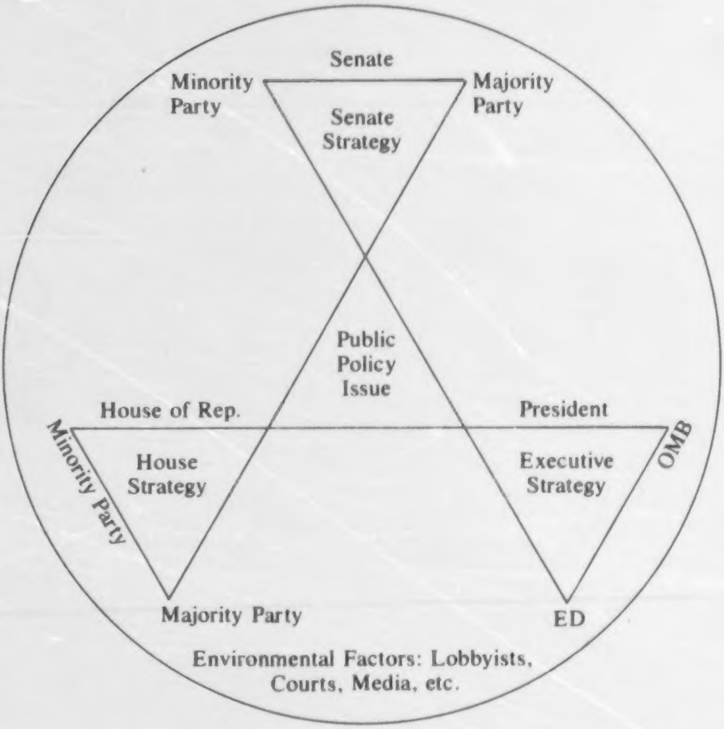
Key Factors in the Congressional Element Related to Bilingual Education and Public Policy.



While the multiplex of interactional patterns suggested in Figure 5 can not be explored in detail here, it should be noted at least that the major forces crystalize into a tripartite pattern in which complex interactions occur. Note also the environmental factors, especially the various lobbying groups, the courts, and the media that impinge directly on the federal policy-making process. Unfortunately, we do not know nearly as much as we ought to about how federal policy in bilingual education is forged at the national level. Epstein's naive contention that the Congress suffers from a "Columbus complex" in bilingual policy making hardly sheds any light on the subject.[7] Works such as Schneider's and others are useful but the case study approach used needs to be supplemented and augmented with longitudinal studies. Moreover, we desperately need to understand the influence of ethnopolitics on the entire federal policy-making apparatus. Without such knowledge, there is little hope that bilingual communities will be able to

FIGURE 5

Underlying Factors in the Congressional Element Related to Bilingual Education and Public Policy.


Senate
Minority Party
Majority Party
Senate Strategy
Public Policy Issue
House of Rep.
President
Minority Party
House Strategy
Executive Strategy
OMB
Majority Party
ED
Environmental Factors: Lobbyists, Courts, Media, etc.

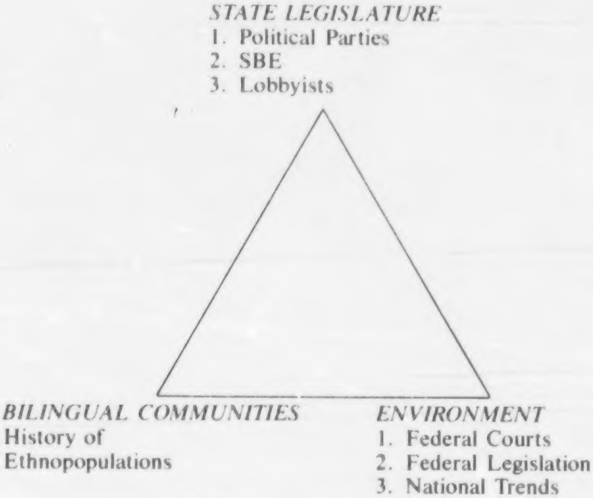
exert significant influence over important policy decisions affecting the future development of bilingual education.

THE LEGISLATIVE ELEMENT

The next element in the proposed framework is state public policy on bilingual education. Some key dimensions of this element are shown in Figure 6. Recent works have made an attempt to elucidate the nature of bilingual policy making at the state level. These studies range from the rather extensive work of Development Associates, Inc.[8] to more focused studies of legislative processes or historical trends such as those of José Vega in Texas[9] and Lawrence Estrada in California.[10] Other studies have focused on specific issues that have arisen in the context of a particular state. Refer especially to the works of Schuhmann in New Jersey[11] and Quesada in Connecticut.[12] In spite of these important contributions, it is quite apparent that much more research needs to be done if substantial insight is to be gained into the many factors that influence bilingual policy making at the state level. Some states, such as Michigan, have mandated bilingual education for over five years.[13] Yet, with rare exception, descriptive studies are not available that shed light on the various factors and influences that led to the formulation of such state policies. Analytic reports that lay bare the state level policy-making process in bilingual education are noticeably lacking for most states. In view of the important role assigned to the states in the educational arena, it should be plain that this element needs much more attention from scholars and researchers if there is to be any hope at all of fashioning a sturdy framework within which effective bilingual education policy can be analyzed and formulated.

FIGURE 6

Factors Relating to the State Element in Bilingual Education Public Policy.



THE MEDIA ELEMENT

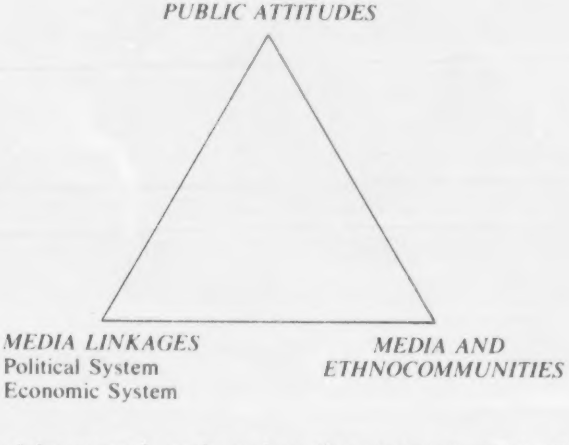
The fourth element in the proposed framework has been designated "the mass media." It is particularly important to analyze and understand this element because it can have a decisive impact on the other four elements. Yet, it can be said without exaggeration that this is one element that has received the least amount of research effort by those involved in promoting bilingual education in the public arena. This fact was most emphatically brought to light during 1979 when the author issued a national call for papers on bilingual education public policy and only one out of the forty-seven papers submitted related to the mass media. This was so in spite of the fact that the call for papers specifically identified the mass media as one of the areas in which research papers would be accepted.

Moreover, the influence of the mass media has tended to be negative and sometimes hostile to the adoption of progressive bilingual education public policy. While numerous illustrations could be given to support this point, three prominent examples ought to suffice: The highly opinionated and chauvinistic article by Philip Quigg in *Newsweek*,[14] the presumed, almost unwitting, expose by Mike Wallace on *60 Minutes*,[15] and the journalistic volume by Noel Epstein[16] that easily qualifies as the world's longest running editorial against bilingual education.

Since the mass media have a significant and pervasive influence on public attitudes and perceptions, the importance of this element in bilingual policy formulation cannot be overstated. There is a need to carefully document the posture that the various media have taken with respect to bilingual education. The connections between public attitudes, the mass media, and formal policy-making bodies—such as state legislatures, the Congress, and the courts—must be laid out and understood before the mass media can be utilized effectively to support bilingual public policy. Figure 7 attempts to highlight these and other important factors underlying the mass media element.

FIGURE 7

Some Factors Related to the Mass Media Element in Bilingual Education Public Policy.



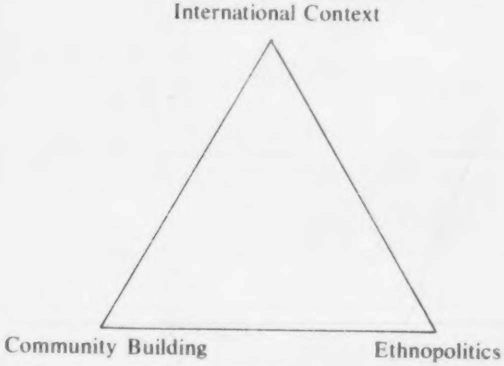
Besides doing research on the various dimensions indicated in Figure 7, it is also necessary to gain an understanding of how bilingual education supporters are utilizing the nonmass media communication channels available to them. The myriad newsletters, journals, textbooks, conferences, workshops, films, videotapes, etc. that have been produced by various bilingual communities—many of them with funding through Title VII of the Elementary and Secondary Education Act—need to be analyzed and assessed for their usefulness in counteracting some of the negative influences of the mass media toward progressive bilingual public policy. These communication channels might be termed micromedia, and their effectiveness could surely be enhanced if it were known with some precision and insight how they are currently being used and what other supportive uses they might have.

THE COMMUNITY ELEMENT

The last of the five elements has to do with bilingual communities themselves. Like the mass media, this element has not been thoroughly researched, although papers such as those by Lois Steinberg[17] and John Attinasi[18] are beginning to ask useful questions and to provide some data related to language phenomena in bilingual communities. Figure 8 is a representation of important dimensions in the bilingual communities element.

FIGURE 8

Some Factors Related to the Bilingual Communities Element in Bilingual Education Public Policy.



One of the most curious things about bilingual communities is that so little is known about the attitudes of ordinary bilingual persons toward bilingual education, especially at the national level. Yet, it is extremely important to gauge rather carefully the grass roots support that bilingual education enjoys within bilingual communities themselves.[19] Similarly, it is necessary to know what apprehensions or concerns members of ethnocommunities might have toward bilingual education and its attendant political and philosophical postures vis à vis assimilation, acculturation, language maintenance, ethnopolitics, and a host of other concerns.

The community element is critical because, among other things, it permits the following question to be raised: Who is to construct the various frameworks within which bilingual education, and in this case, bilingual education public policy, is to be conceptualized, planned, and carried out? All too often, members of bilingual communities have not enjoyed the opportunity to do important research in bilingual education policy. This is an unfortunate situation for bilingual education because research is an activity that is profoundly affected by the social and cultural environment in which the research act takes place. Issues and questions of policy in bilingual education can have very different meanings and answers depending upon the individual researcher and the context in which those questions or issues are raised.

In fact, questions (and answers) in general are never absolutely objective, and those who ask a question may assume very different premises from those who must ultimately answer the question. It is said that Francisco Quevedo, the famous Spanish writer, once bet a friend that Quevedo would tell the queen of Spain to her face that she was a gimp. Naturally, such an audacious and irreverent act seemed an impossibility, so Quevedo's friend accepted the bet. Quevedo, famous for his boundless wit and resourcefulness, was quick to find a solution. It is said that he took two flowers—one in each hand—and presented them simultaneously to the queen. In his left hand Quevedo held a clavel (carnation) while in his right hand he held a rosa (rose). He then asked the queen to choose between the two flowers by saying, "*Entre el clavel y la rosa Vuestra Merced escoja.*" (Of course, *escoja* means "choose" but is homophonous with the Spanish expression for female gimp—*es coja*. Thus the sentence could be interpreted in two very different ways. It could mean either "Your Highness, choose between the carnation and the rose," or "Your Highness is a gimp between a carnation and a rose.")

Quevedo eventually languished in prison for this and other indiscretions, but the lesson to be learned here is that the very act of asking a question, and the nature of the question itself, already has potential policy implications. The decision maker may be led down a rosy path by a clever researcher who has a hidden agenda. Thus, it is quite legitimate to question the motives and perspectives of researchers, because these factors ultimately are conditioning influences on the research act. Such questioning of researchers, to be most effective, ought to originate in the bilingual communities themselves.

SEARCHING FOR INFORMED POLICIES AND ELEGANT PRINCIPLES

It should be apparent that the five elements of the framework just outlined encompass quite a large space. Thus there is ample room for energetic and motivated researchers who would like to contribute to bilingual public policy analysis and formulation through their research findings. On the other hand, this broad expanse of relatively unexplored ground should signal the need to redouble the research effort. For it cannot be reasonably expected that bilingualism and bilingual education will be successful if there is little or no awareness of the many factors that alone and in concert determine the nature and outcomes of bilingual education.

In conclusion, it may be worthwhile to enunciate some tentative principles that may govern, or at least influence, bilingual education, and more specifically bilingual education public policy formulation, in the United States. For those with a more conservative approach to inquiry, consider these statements as hypotheses yet to be confirmed through systematic research. In any event, they can be used as a heuristic tool to encourage more comprehensive analysis of bilingual education policy. The statements are not necessarily given in order of priority.

The Principle of Interrelatedness

Note that the public policy framework proposed here is embedded within a triad of components that might be called a metaframe. The reason for paying particular attention to this metaframe is that public policy formulation is not merely political in character. It is a process that in today's hypertechnological society is markedly influenced by the technological and educational systems that form its context. One might say that public policy is determined not only by politics, but also by the politics of expertise. Hence, in dealing with public policy formulation for bilingualism, it is important to recognize that the task is complicated by the need to understand not only politics, but theory and technology as well. And to the extent that either theory or technology in bilingual education remain unknowns, to that extent will the difficulties increase in attempts to develop and implement progressive bilingual public policies.

The Principle of Community Groundedness

It seems that an authentic approach toward language policy must be grounded in the everyday needs and conditions of the citizenry. It is all well and good to discuss language planning and policy making as an academic and scholarly activity, but an equally important need today—at least among certain ethnocommunities—is to clearly articulate possible choices among language alternatives, and to determine what impact those choices might have on the everyday conditions of those communities. Hence, a prominent concern of such ethnocommunities is the formulation of bilingual policy because bilingualism (not just language) is a feature that characterizes the ethnocommunity and renders it distinctive. In short, the point of departure for such communities is precisely their bilingual character. And their most basic need is not to discover their bilingualism—for it has always been there and they have been conscious of that fact—but to fashion the future course and development of that distinctive bilingualism.

The Principle of Historical Overdetermination

It appears to be an inescapable conclusion that one fundamental aspect of bilingualism in the U.S., especially English-Spanish bilingualism, is its inevitable connection to a legacy of rivalry, friction, and aggression that has characterized the contacts between Iberian and Anglo Saxon peoples on the one hand and various European and Native American nations on the other. The contemporary debate over bilingual education in the U.S. appears to be subtended by this legacy of hostility. As a result, much of the opposition that is expressed against bilingual education in the U.S. tends to reflect the opposition's perception of some noxious, foreign or otherwise threatening element in bilingual education.

Placed in the context of this primordial hostility, it is easier to assay the endless editorials and featurettes that harangue against the very concept and postulated results of bilingual (and bicultural) education. Few if any of these broadsides have voiced concern on genuine educational grounds. Their gripes against bilingual education are linked to bipolar notions such as unity and separatism, natives and foreigners, or quaint melting pot notions of nationhood and peoplehood. The critics argue with solemn monophonic voices that all Americans must learn English while cynically ignoring the evidence that shows that certain American institutions (namely the schools) have seen to it that some Americans may not be able to learn English or to learn it poorly.

The Principle of E Pluribus Unum

As one studies the critics of bilingualism and bilingual education, one is also struck by their profound ignorance and perversity with respect to a fundamental national principle of the U.S.: *E pluribus unum*. It has been a national tenet for over two hundred years that the U.S. is necessarily a composite of a multitude of peoples from all over the world. Many came to the new land searching for opportunities to better their lives; others came to preserve valued ways of living that they desperately wanted to maintain and pass on to their children. In this context, the literal and authentic meaning of *E pluribus unum* is that a cohesive governance system shall be welded together and rendered functional by the collective efforts of diverse populations. The interpretation that renders this expression to mean that all languages that touch upon American soil, save English, must be altered, transitioned, or eradicated is a pernicious and revisionist interpretation that at bottom is profoundly un-American. Such an interpretation makes a mockery out of the first European Americans who long ago envisioned the great American nation as a refuge from tyrannical monotheists and monarchs, and as a home for those who value the liberation of the human spirit.

Within this historical framework of unity through pluralism, it can be seen that bilingual education is one of the few contemporary social trends that makes the case for maintaining the plural character of the nation while assuring national unity. There are at least two basic approaches to national unity. One is to attempt to destroy all elements that do not fit into a preestablished notion of what is the nation. The other is to expand the meaning of national identity to include all elements that form a functional part of the nation's life. The first approach is exclusionary, oppressive, and, in its day-to-day manifestations, racist. The second approach is inclusive, symbiotic, and respecting of manifest differences in human behavior and character. The first approach ultimately leads to political tyranny and the attendant wars of liberation; the second approach, for which we must look to Nature as a guide, should lead to balance and harmony even while immense forces and pressures are at play.

The Principle of Responsive Government

It is worthwhile to reemphasize that the essential function of government is to provide protection for the people that it serves. Any government without the capability to defend its people against external aggression is a contradiction in terms. A government that cannot protect its subjects from natural and social misfortunes is one good definition of a bad government. Hence, few people vilify the government when it takes reasonable measures to protect the lives and fortunes of its citizens if they have fallen upon misfortunes or hard times: misfortunes caused by natural disasters, man-made disasters, or even the vicissitudes of the national economy. How ludicrous then for self-appointed defenders of the national weal to enjoin the use of government resources to carry out bilingual education activities. Bilingual populations in the U.S. have suffered nothing less than a disaster at the hands of traditional educators, a misfortune of monumental proportions that is no less real because it has been ignored by many of the monophonic speakers. To say that bilingual education under these circumstances belongs in the home and should be relegated to parents and church groups is to say "Let them eat cake!" Unfortunately, some Anglophonic Americans have seen to it that language and ethnic differences have redounded to the detriment of certain ethnocommunities. Therefore it is reasonable and just that those communities should demand assistance and protection from their government. Such assistance and protection should not be given grudgingly or viewed with mock disbelief. It is clearly within the purview of government to assist and protect its citizens.

CULTIVATING THE ETHNOGARDEN

Finally, it needs to be made clear that this paper is basically a report of "thinking in progress" related to the important area of bilingual public policy formulation and analysis. If this kind of thinking has any merit at all—and it is at least worth considering—then it is particularly important to continue to broaden, refine and systematize the concepts and ideas presented. Moreover, there must be a collective will to carry out the systematic research required to fashion the various frameworks that such thinking allows us to construct. Only then can one hope to determine whether the thinking expressed here has opened new and fertile ground for cultivation, or whether in fact one can get corralled within the arid confines of an intellectual, political, and educational ethnodesert. Perhaps it is not too much to expect that the former will prove to be the case.

NOTES

Earlier versions of this paper were presented at New York University, Conference on Language Policy and Bilingual Education on November 19, 1979, and at the 9th Annual International Bilingual Bicultural Education Conference, National Association for Bilingual Education (NABE), Anaheim, California on April 22, 1980.

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19. See the following related works: Norberto Cruz, Jr., "Roles, Functions and Compliance of Parent Advisory Councils Serving Spanish-English Bilingual Projects Funded Under ESEA Title VII," in Padilla, *op. cit.*; Rodolfo Jacobson, "Can Bilingual Teaching Techniques Reflect Bilingual Community Behaviors? A Study in Ethnoculture and its Relationship to Some Amendments Contained in the new Bilingual Education Act," in Padilla, *op. cit.*; Rodolfo Rodriguez, "Citizen Participation in ESEA Title VII Programs: An Inquiry into the Impact of a Federal Mandate," in Padilla, *op. cit.*; also see Adalberto Aguirre, Jr., "The Sociolinguistic Survey in Bilingual Education: A Case Study of a Bilingual Community," in Raymond V. Padilla (ed.), *Ethnoperspectives in Bilingual Education Research, Vol. II. Theory in Bilingual Education*, Ypsilanti, MI: Department of Foreign Languages and Bilingual Studies, Eastern Michigan University, 1980.

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